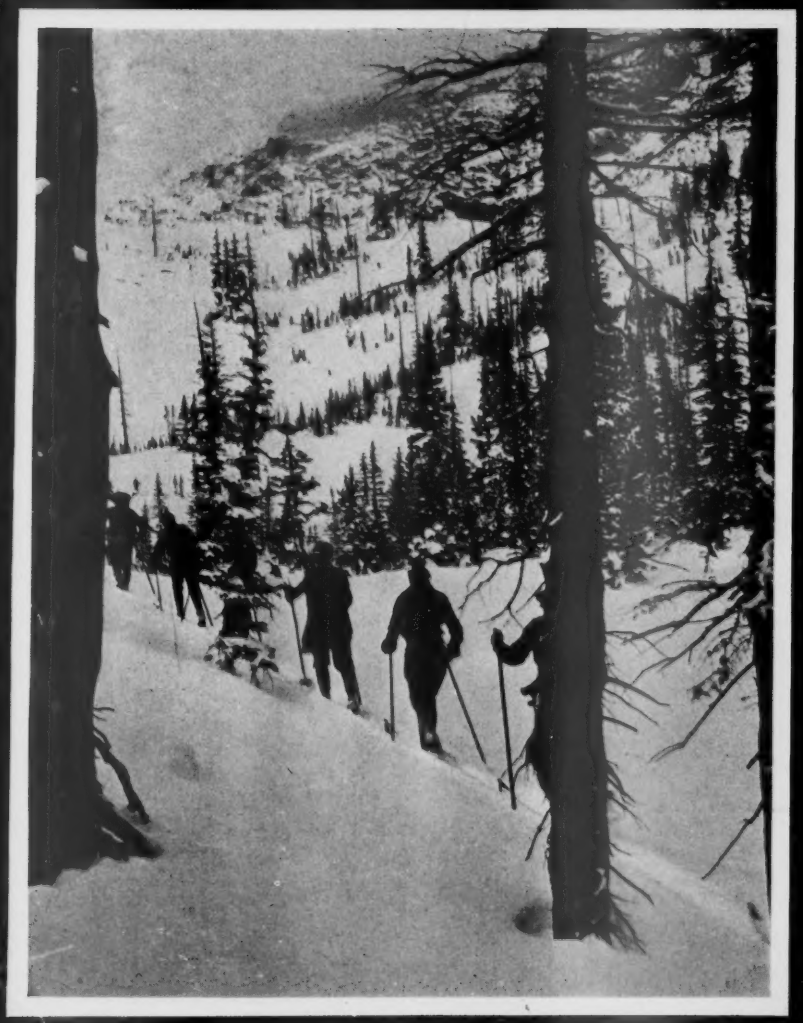
# American Forests and Forest Life



February. 1930

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

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# AMERICAN FORESTS AND FOREST LIFE

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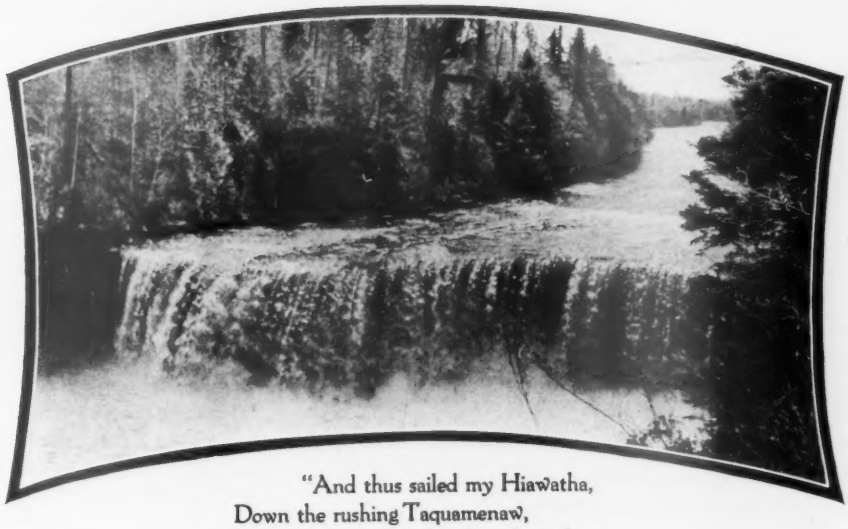


"And thus sailed my Hiawatha,
Down the rushing Taquamenaw,
Sailed through all its bends and windings,
Sailed through all its deeps and shallows."

# *Down Hiawatha's River*

By Ben East

BURIED in the wilderness of the northern peninsula of Michigan, the Tahquamenon River takes its forest-flanked way to the shining waters of Lake Superior. He who follows the Tahquamenon "From its scource among the fenlands, to the shining Big-Sea-Water" will travel through a country made glamorous by Longfellow in his "Songs of Hiawatha," for the Tahquamenon is Hiawatha's river. On its placid current it still bears something of the romance of ancient days, something of the high adventure met by the legendary heroes of the Ojibways and Dacotahs. From the shores of the river one can almost see again their canoes pass between the tree-clad banks, "like a yellow leaf in autumn." One almost hears again the singers and story-tellers, relating tales of Pau-puk-keewis, of Kwasind and of Mudjekeewis.

It was on the shores of Lake Superior at the mouth of the Tahquamenon, that "The wrinkled old Nokomis nursed the little Hiawatha, rocked him in his linden cradle, bedded soft in moss and rushes." It was on the Tahquamenon that Hiawatha launched his birchen canoe, "with the forest magic in it."

Many changes have come to the Tahquamenon since the distant day when Longfellow first saw it, eighty years ago, winding between its pine-clad banks. No longer do the dark forests of towering pines march, rank on rank, down from the hills to the very edge of the river. Forests of aspen and birch line the banks of the Tahquamenon today, with dense tangled swamps of spruce, balsam and cedar in the deep valleys between the hills.

Pollution from a charcoal-iron plant at Newberry, the municipal wastes of that village, and sewage from the Northern State Hospital for the insane, located there, so befoul the river that not even Maskenozha, the pike, lives in the downstream reaches for many miles.

Yet, despite these things, the Tahquamenon is still a river of loveliness and forest lure, running for more than fifty miles through unbroken wilderness, even though it is largely a wilderness cut over and regrown. It is a tranquil stream. "In his birch canoe came Kwasind, floating slowly down the current of the sluggish Taquamenaw," the poet sings in relating how the strong man, friend of Hiawatha, came to his death at the hands of the Puk-Wudjies, the malicious Little People. Twenty-five miles above its mouth, however, this placid river plunges into a rocky gorge and hurls itself over two ledges, six

Indian file, down the white highway of the frozen river

In a cloistered spot of matchless beauty—the thundering torrent of the Upper Falls

miles apart, to form the two falls of the Tahquamenon, Michigan's greatest waterfall, a forest-cloistered spot of beauty with few equals in the upper Great Lakes region.

Because of these falls and the historic legends of Hiawatha, the Tahquamenon long has been a favorite highway for a limited number of wilderness-voyaging canoeists. In the summer of 1928 a motor boat made daily trips down the river as far as the big falls, offering a ready means of transportation to visiting tourists. So pictures of the falls of the Tahquamenon are no rarity—summer pictures, that is.

But of winter pictures, when the river and all the country of the Tahquamenon was shrouded in snow and when the falls were shackled in great fetters of ice, there were none. Strangely no professional camera expedition had ever followed the windings of "the bleak and wintry river," in the season when "Ever thicker, thicker, thicker froze the ice on lake and river, ever deeper, deeper, deeper fell the snow o'er all the landscape." An expedition that attempted to penetrate to the falls to take pictures in the winter of 1928 spent three days getting within nine miles of the goal, hampered by deep snow and bad storms, and then was obliged to turn back when a poorly trained dog team failed under the load of cameras and equipment.

So, when our party of six trekked down the lower reaches of the Tahquamenon to Emerson, a deserted lumbering town on the shore of Whitefish Bay, in February, 1929, ending a fifty-mile trip by snowshoe begun four days earlier, the first successful winter camera visit to the falls of Hiawatha's river came to an end.

During that four days we followed the frozen river, turning aside only when thin, treacherous ice forced us to do so for the sake of safety. We trudged steadily through a silent, frozen wilderness, passing only two human habitations.

Our supplies and cooking utensils we carried in packs on our backs. We took food for six days in the event snow or bad weather delayed us. To make our packs as light as possible we dispensed with blankets, trusting to luck that we would find deserted hunting camps along the river.

From Soo Junction we headed north along an abandoned railroad grade toward Hunters Mill, a deserted lumber village on the river, that now finds its only use as a deer hunting camp. We halted beside the crumbling ruins of this old mill, adjusted our snowshoe straps, rested for a few minutes and swung out onto the smooth going of the frozen Tahquamenon. We trudged along in single file, taking turns in breaking trail through the foot or more of snow that covered the ice.

Memories of the legends of Hiawatha went with us as we plodded along, steadily putting bends of the river behind us. Here the Indian hero had launched and sailed his magical canoe. Here with his friend Kwasind he had "Cleared its bed of root and sandbar, dragged the dead trees from its channel . . . made a pathway for the people." Here he had planted his maize and sent Laughing Water forth to bless the fields according to the ancient rites of the Ojibways. Here, too, from his lodge he must have looked forth upon much this same white and lonely scene, when the poet exclaims "O, the long and dreary winter; O, the cold and cruel winter!"

Signs of wild life were abundant in the white frozen world as we pushed on down the Tahquamenon. Only a few miles below Hunters Mill we found the trail of a huge timber wolf preceding us on the ice. Someone had come out on skiis a day or so before, and contrary to the usual ways

The Lower Falls, clothed with great blocks and barriers of ice

of north country wolves this bold old raider had taken to the skii trail and followed it for miles. Finally he was joined by two others, probably his mate and her lone whelp of the year before, and for forty-eight hours this trio of gaunt gray killers kept a half day's journey ahead of us down the river, traveling by night the same reaches we were to follow by day, trotting along the shores, frolicking on the ice, or turning aside into the swamps for the serious business of hunting.

Deer runways came down and crossed the river at frequent intervals where swamps bordered the shores, well-trodden paths, beaten as deep in the slush and snow as if a flock of sheep had traveled the river. Trails of fox, coyote, weasel, rabbit and deer crossed and overlapped on the ice at times. We passed snow-capped lodges, where Ah-meek, the beaver, was spending the cold weeks of winter in snug security, safe within his mud-and-stick walls. We found slides where Ne-geek, the otter, had coasted down the snowy banks, and ominous black holes, kept open by the current, where he dived to his dark quarters beneath the ice.

Of all this wild life, however, we saw nothing. We were moving with too little caution. There were countless places where without doubt if we had sat quietly for an hour or so a deer would have come within bow range of us. At least we did see Kagh, the porcupine, and many of his family, hanging contentedly in the wind-swung tops of tall trees despite the cold weather and snow, dining on bark and tender twigs. And once a great eagle wheeled in broad circles overhead.

Late that first afternoon we came upon a break in the forest along the eastern bank of the river. In the center of a big clearing, half buried in snow, sat the old MacNerney cabin where we were to spend the first night. We trudged wearily up the bank, unstrapped our snowshoes and unslung our packs. Twelve miles of our journey were behind us.

The open rapids above the Lower Falls, and the tree-clad banks of the Tahquamenon today

An hour after daybreak we resumed our trek down the frozen Tahquamenon, with treacherous, rotten ice sagging beneath us. Without warning, a member of the party plunged into water fifteen feet deep, saving himself only by dropping across a staff he was carrying. Drenched to the waist in the icy river and with no shelter at hand, he elected to keep going until we reached a deer hunting camp, which proved to be two miles downstream. Fortunately it contained a good supply of dry firewood.

At this point we left the river, driven to forsake its smooth broad highway because of the treacherous ice, undermined by the current and weighted down with snow. For two or three miles we plunged through the timber along the shore, clambering over fallen logs, forcing our way through dense thickets of spruce and cedar, taking turns at breaking trail. It was heartbreaking work and as soon as we dared we took to the ice again, roped together at twenty-five foot intervals for the sake of safety, after the fashion of Alpine climbers.

We traveled for miles over ice so thin and rotten that a staff pushed down through the snow and slush could be plunged into the black water at a single thrust. Only our snowshoes supported us by distributing our weight over a large area of the ice and snow. Without them we should have broken through at each step.

Late that afternoon at the mouth of Linton Creek we passed the cabin where a fur trapper was spending the winter, twenty miles by river from the nearest neighbor. That cabin, snugly built of freshly peeled logs, was the only occupied dwelling between the old MacNerney

Below the frozen beauty of the Falls—"Ever thicker, thicker, thicker, froze the ice on lake and river"

place and Emerson at the mouth of the river, forty miles away.

Shortly before dusk we reached a deer hunting camp on the shore of the river, where we caught a glimpse of a long stretch of open black water—the rapids of the Tahquamenon, less than a mile above the big falls. We paused for a minute, standing silent in the light snow that was sifting down. Faint, subdued with distance, a low murmurous thunder reached our ears. It was almost lost in the stillness of the night, yet we knew it for the full-throated roar of the great waterfall, and a thrill of exultation ran through us at the knowledge that we were near our goal.

We slept that night without blankets on the bare bunks of the hunting camp, taking turns keeping a brisk fire going in each of the two stoves. Drifts were banked above the window sills, shutting out the wintry wind that droned about the corners af the camp, and once the fires were under way the place was warm and comfortable. Nor, despite the isolation of the winter wilderness, did we entirely want for company. Bright-eyed deer mice that make a rendezous of every empty camp in the north country, came out and scampered along the beams of the cabin or sat and stared at us in the dim light of a candle stub.

It had been snowing most of the day, and the light, dry fall continued throughout the night. We went forth at daybreak into a white fairyland that beggared all description. Every log and stump in the timber was buried beneath a deep mound of spotless white. Every black leafless branch of the hardwoods was ridged with it. Even the slender trunks of the birches were wrapped in a clean wrapper whiter than their own slim whiteness. Every spruce, balsam and cedar was a gleaming pyramid of alabaster, all the dark green branches hidden beneath this cloak of loveliness. The forest that had been dark the day before was suddenly transformed into a new thing, a forest that stretched away into the distance as white as marble. And through this white forest ran the black rapids of the Tahquamenon, gathering for the plunge into the gorge a mile below.

From a steep hillside just above their brink, standing in snow waist deep, we had our first glimpse of the Falls of the Tahquamenon—the glory of Hiawatha's river. Ice-choked along its shores, broken and lashed to foam in the lower stretch of the rapids, the Tahquamenon plunged over the precipice in a thundering cataract no more than forty feet wide. The remainder of the falls, three hundred feet across at spring water stage, had been halted in its drop, frozen into a gleaming cliff of ice.

The rocky walls of the gorge below were hung with great stalactites of ice. Near the brink of the falls these stalactites were tinted amber from the chemical pollution that taints the river. Further down the gorge this pollution was filtered out by layers of rock through which the water had seeped before it dripped out and froze in long pendants. An uncertain bridge of blocks of ice cemented together by the cold spanned the river just below the falls. On this rough jam it proved possible to approach almost to the verge of the seething whirlpool where the river was sucked beneath the ice. Midway of the precipice a terrace of ice, built up of frozen spray and snow, rose in a series of gleaming steps almost to the top of the falls, dividing the river in half. To the west of this terrace the falls were frozen solidly in their downward leap, not even a trickle of water finding its way over the steep cliffs.

Beneath the falls, between the outflung water and the back wall of rock, we found a cave, heaped high with ice, washed with cold spray, shaken with the blows of the water upon the rocks and filled with the thunder of the leaping river. In summer, we had been told, when the water is low in volume, it is possible to pass entirely across the river through this cavern beneath the waterfall. At this season, however, we found water from the torrent overhead seeping down the ice cliffs and across the treacherous floor of the cave, and this trickle of icy water and the blinding inferno of chill spray drove us back when we had penetrated only a few feet from the entrance.

Our series of pictures of the big falls completed, we trudged on down the Tahquamenon toward the little falls, six miles away. What they lack in the majesty and power that marks the upper falls, these lower waterfalls of the Tahquamenon more than repay in misty loveliness. Rainbows drift in the spray above each ledge and at the foot of the falls outjutting rocks form a narrowed gateway through which the escaping foam-burdened river leaps with a full-throated roar. That February afternoon, however, we found this picturesque falls transformed into an ice-choked gorge through which the water poured as through a long, steep raceway. Little trace remained beneath the mask of ice and snow of the twin ledges or of the smooth drop of the summer cataract. The lower falls in winter are little more than a continuation of the stretch of rock-shredded rapids that begins a mile or more upstream, where the waters find speed and daring to defy the fetters of the ice.

Darkness was deepening over the timber when we trekked back to our comfortable cabin with cooking utensils hung along the walls above the stove and plenty of warm blankets folded in a mouse-proof cupboard.

Blisters showed on the feet of some of us in camp that night, and we rubbed and massaged sore muscles, stiffened and lamed by three days of steady snowshoeing. We were travel worn. We had come nearly forty miles under pack, and the trip was beginning to take toll.

It is not, however, any of the minor discomforts of that trip down the Tahquamenon that we remember best. It is the stilled and frozen beauty of the great waterfall of Hiawatha's river, in the season when

*"Motionless are all the rivers,*
*Hard as stone becomes the water, . . .*
*All the land with snow is covered!"*

# An Adventure in Bug Hunting

## *Wherein Foresters Call Upon Their Arch Enemy, Fire, to Rout the Beetles and Save the Pines*

By David Arrivee
*Assistant Supervisor, Targhee National Forest*

BARK beetles everywhere!

Red, tell-tale pitch tubes, with their sawdust coating, peppered the trunks of the Lodgepole pine trees, a little group here, a single tree there, and then whole sections spotted with patches of yellowing and brown-topped trees.

Unheralded, and its insidious advance scarcely noticed, it was discovered one day in 1927 that here on the Targhee National Forest, in northeastern Idaho, was a well-advanced, dangerous insect infestation. What had formerly been considered inconsequential, "normal" insect attacks had, as the result of some favorable condition, some tipping of the usual fine balance of nature, attained epidemic proportions and threatened to ravage the valuable Targhee tie forests and the wonderful Island Park recreational and summer home country. Unchecked, it might even sweep the adjacent Yellowstone National Park, Jackson's Hole and the rest of the Rocky Mountain Lodgepole pine region.

Unlike fire, insect infestations send up no black and pungent smelling smoke signals. The myriads of little black beetles, each smaller than a grain of wheat, show themselves only during the short midsummer mating flight, attack a tree at the rate of one pair for each of the hundreds of pitch tubes that usually exude from the entrance holes on the trunk, and then attend strictly to business under cover of the bark.

The female constructs a tunnel from eight to twelve inches or more in length straight up the tree on the growing cambium layer between the bark and the wood. Her eggs are packed in side niches as she goes and the male beetle keeps the entrance cleared of sawdust and pitch. The white worms, or larvae, which hatch from the eggs, subsist on the tender cambium layer and make short, horizontal galleries at right angles to the main tunnel. The damage is done by the intersection of these larval mines, and the resultant girdling is probably more quickly effective in killing the tree because of the admission of drying air into this network of galleries. Before the life history of one year has been completed the tree has changed from an early spring yellow-top to a red-top and it is dead by the time the July and August flight of mature beetles begins. The ratio of newly attacked trees to red-tops is about nine to one.

**MAKING A THOROUGH JOB OF IT**

**Using a pressure pump to coat the trunk of the beetle-infested tree with kerosene, the "treater" ignites this and then follows up the tall trees as high as he can with the fuel, to make the fire "crown" through to the tip**

With the appalling task ahead of us of exterminating this insidious enemy—often as deadly as fire—from thousands of acres of timberland, a handful of Targhee forest officers aided by two rangers from the Teton Forest and some hired help started control measures by the accepted method of felling the infested trees, skidding them together in piles and burning them. Some of the trees were peeled instead of burned. Progress was slow and it became obvious that, in this race for territory, we were the turtles, and there was little chance of the bugs stopping to take a nap on the job. We cast about for shortcuts, poison, fire, anything but the time-consuming and tedious felling and burning.

Being fire-minded, our

ancient enemy was finally put to work. We grasped at a rumor that had come down from the Big Hole country in Montana of the trial and discarding of an experiment to scorch pine beetles by burning kerosene on the tree trunks. With an old hand fire pump, we sprinkled kerosene on the boles of some of the trees, burned them and watched results. On stripping off the bark the beetles were found to be dead; the larvae had changed from a white to an ivory color and showed no signs of life. The method worked. Suggestions and help came our way, the market was searched for suitable equipment, and, by way of trial and error, there has been developed a rather unique and effective time and labor-saving method of bark-beetle control—the oil-burning treatment for Lodgepole pine.

**DISTRIBUTING THE FUEL**

**A "Lizard" is used to distribute kerosene to central locations on the Targhee Insect Control Project**

In this treatment oil is sprinkled evenly over the trunk of a tree with a small pressure pump carried on the back. The oil is lighted and the tree trunk is enveloped in a sheath of flame, which chars the bark and cooks the beetles, larvae and eggs. The death of the tree is hastened by only a week or two and the treatment is not applied to the occasional trees that have "pitched out" the beetles with an extra heavy flow of resin and give promise of living. Successful attacks of the beetles are indicated by woodpecker work, smaller pitch tubes or resin exudations protruding from the bark, sawdust on the pitch tubes, the blueing of the sapwood, which occurs early in the attack, and by the yellowing of the foliage in late spring. The treatment is applicable only to thin-barked species like Lodgepole pine.

With two seasons of work now behind us, a fairly uniform system of organizing and conducting the control work is in practice. In the fall a survey is made to locate and estimate the extent of the attacks. The approximate number of infested trees is determined by running parallel strips one chain in width and one-half mile apart over the country known to be infested and by searching for red-topped trees throughout the rest of the Lodgepole pine type. From the average number of infested trees per acre found on the strips the number infested on the total acreage is computed. Armed with this information, maps and reports are assembled and started on their way toward the procuring of appropriations to carry on the fight against this tiny but powerful enemy of the forests.

In the spring camps are organized—as many as eight or nine for the far-spread Targhee infestation. The oil is trucked to the forest in fifty gallon drums, hauled to the camps by team, and distributed over the projects on horse-drawn "Lizards"—sleds made from knees of crooked trees. From the barrels it is carried to the treating crews on pack horses, four five-gallon oil cans to the horse. The infested trees are located, tagged, numbered, and charted by number on a diagrammatic map by a spotting crew of from two to five men traveling abreast, systematically, back and forth over the areas. The treating crews follow, two or three men for each pack horse, each man carrying on his back a four-gallon galvanized iron tank that develops forty-five pounds of pressure and is fitted with a hose connection, a shut-off valve, and a nozzle in which the aperture is made with a No. 55 drill. The oil stream is fine and it remains intact for most of its length finally breaking into drops over a four to six-inch spread. The pressure tanks are filled and pumped up, the tags pulled from the trees for the camp record, and the treatment is given. Directing the oil stream quickly up and down the trunk, the treater gives it an even, thin coating, with an extra dash around the base where the bark is thick. Striking a match, he tosses it

**PACKING IT IN**

**Kerosene is packed on horses directly to the treating crews for burning trees infested with bark beetles**

at the foot of the tree and with the oil stream carries the flame up and around it, placing an additional amount of the fuel as high as he can reach up tall trees to make the fire "crown" through to the tip. The oil stream reaches only from twenty-five to thirty feet, which is higher than the infested length of average trees, but, in order to "crown" a much greater number of the tall, large trees, the crews carry eight-foot extension pipes that fit on the ends of the hose connections.

On the Targhee projects, kerosene is favored for this work over distillate and fuel oils. Aside from the personal matter of blistering the skin less severely, kerosene has been found to flash more quickly and to produce a larger volume of flame that can be more effectively carried around and up into the top of the tree against the counter action of even a light breeze. Under unfavorable conditions its use frequently makes the difference between crowning and not crowning.

Kerosene, delivered to the Targhee jobs, costs an average of twenty-one and one-third cents a gallon, distillate nineteen cents, gas oil twenty cents and steam still bottom twenty-three and one-half a gallon. The treatment requires an average of one-half gallon of kerosene to the tree. Computing the cost of equipment, labor, hauling, team hire, fuel, camps and supplies, the 1929 Targhee projects cost forty-six cents a tree. This is low compared to the reported cost of one dollar and seventy cents a tree on similar projects where the method of cutting the infested trees, skidding them into piles and burning is practiced. Also, the oil-burning treatment takes only about one-tenth as much time as the cutting and burning method and enables us to cover an extensively infested territory in the short period of four or five weeks between deep snow and the beginning of the forest fire hazard.

The method is new. It is still in the process of development, and, consequently, there are still difficulties to overcome. Chief among these is the need for some improvement in back-portable equipment that will force the kerosene stream higher, possibly to fifty feet or more, in order to dispel any doubt of there being any larvae left in the tops of tall trees without having to resort to the slow and tedious process of cutting them down.

**THE END OF THE "BUG HUNT"**

**The kerosene coating is lighted and the tree trunk enveloped in a hot sheath of flame, which leaves the bark charred black and the beetles beneath it dead**

Tests of new equipment, studies, and comparisons of results go on between treating seasons in an effort to improve the technique of the oil-burning method, to reduce costs, and to speed it up.

Although it will be necessary to treat again over much of the same ground covered in the spring of 1929, it is very encouraging to find that the number of trees attacked on treated areas after the summer emergence is only fourteen to sixteen per cent as many as were treated, a ratio that should reduce the infestation to practically nothing in a few more seasons or completely eliminate it in a shorter time by increased efficiency in locating every tree and in treating the entire lengths of all of them.

A disconcerting thing about insect infestations, however, is the astounding way in which new infestations pop up on areas widely separated from former centers of attack. It seems as if nothing short of a bird's-eye view can locate at one time all of the small developing attacks scattered throughout a sea of Lodgepole pine timber in a mountainous country. Forest officers have become what is termed "bug conscious" and are constantly on the lookout for the occasional groups of rusty-topped trees and for the pitch tubes that mark an attack. A few of the small infested areas are being partly controlled by sales of the timber for the manufacture of ties; all of them are promptly included in the plans for complete control.

Anyone connected with a bad forest tree insect epidemic will admit a great deal of respect for the opinion of the scientists who insist upon the somewhat pessimistic statement that we are still in the insect age. We on the Targhee National Forest are certain that these men know their insects—particularly beetles.

# *Honor Living Christmas Trees*

## *National Ceremony at Washington Attended by President Hoover and Cabinet Officers Gives Impetus to Community Christmas Tree Movement*

WITH millions of people listening in over a nation-wide radio hookup, President Hoover and Secretary of the Interior Ray Lyman Wilbur gave new impetus to the living Christmas tree movement at the dedication of the new National Community Christmas Tree at Sherman Square, Washington, D. C., December 24. The tree, a Norway spruce, was given to the nation by The American Forestry Association and the Amawalk Nursery, Amawalk, New York. It replaced the first tree donated by the Association, and which was injured by heavy wiring and lighting.

After officially lighting the tree, the President expressed his pleasure at having the opportunity of wishing the thousands gathered around the tree and the millions listening in over the radio a Merry Christmas. Joseph Wheeler, a Boy Scout, and Alice Leake, a Girl Scout, presented to the President and Mrs. Hoover the Christmas greetings of the people.

**President and Mrs. Hoover beside the National Christmas Tree at Washington just after it was lighted**

In introducing President Hoover, Secretary Wilbur said: "A short time ago some Navajo Indians went from their semi-arid reservation for a visit to the Pacific Coast where for the first time they saw some of the giant redwoods of that region. Deeply impressed, one old Chief said to me: 'The Great Spirit must have loved this country to have given it such beautiful trees.' Certainly nature has been most kind to our country with its lavish gifts of wonderful trees of all sorts. We think of the maple, the walnut, the hickory, the willow, the oak, whenever we think of trees, but among those given to our country were millions and millions of firs, pines and spruces. This made it possible for our forefathers to readily obtain evergreen Christmas trees for their winter firesides. Much of our home tradition is built around such customs as the Yule log, the stockings hung before the fire, and the gaily decorated Christmas tree with its sparkling lights and bright toys. Since the early days, the number of our homes has greatly increased. This has made the call upon our forests for Christmas trees a very heavy one, particularly since trees are so useful to us in a hundred other ways. It may take two thousand or more years to grow a great tree but in a few hours a man or two may cut it down. Small trees for the home grow quickly and can come from places where a thinning-out process is beneficial, but community Christmas trees, where all can join in a celebration of Christmas Eve, have to be large enough so that all can see them. In order to avoid waste of tree life, the planting of community Christmas trees in favorite spots has been encouraged by The American Forestry Association. This National Community Christmas Tree of Washington is a spruce brought from New York and planted here through the efforts of a number of interested organizations and patriotic and thoughtful men and women.

"We come together here tonight (*Continuing on page* 128)

# New Frontiers for the African Lion

## How Settlements and Railroads Are Affecting the King of Beasts Today

By Ignatius Phayre

SEVERAL years ago the first train arrived at the once mysterious source of the Nile at Ripon Falls, where the classic river issues from that inland sea known as Lake Victoria Nyanza, discovered sixty-five years ago by the explorers Speke and Grant. One may now travel by train from the Indian Ocean to the Nile, and thence by luxurious steamers all the way to Khartoum, Luxor, and Cairo. Yet another branch line is projected from Jinja on the Lake to Kampala, and thence to the Belgian Congo. These new systems traverse the last great game preserve of darkest Africa, where elephants once roamed in herds a thousand strong, with zebras, antelopes and giraffes like the sea sands for multitude, and lions in troops up to thirty or forty. These last preyed upon all, and could be seen instructing half-grown cubs in methods of mute hunting, and the scientific kill and butchery peculiar to these magnificent cats.

Publishers Photo Service

**The "King of Beasts" stands, royally questioning the human invasion of his last stronghold in the wilds of Africa**

What does the "King of Beasts"—as he is well called—think of the human invasion of his last stronghold, which was entailed by the political division of Uganda, and the development of Kenya Colony? How does he accept Nairobi as a populous city and hunting headquarters of the rich, and the appearance of motor-Pullmans and *char-à-bancs* at the foot of Ruenzori, Kilima Njaro, and the Mountains of the Moon? What peace or prey can remain for the lion in this new day of progress, with the torrent of tourism pouring in all directions, from the Sahara clear down to the once dreaded Kalahari?

The lion did resist that Uganda Railway. At Tsavo Station several man-eaters appeared, and made off into the jungle with hundreds of black laborers. One night two white hunters sat in a first-class coach with express rifles between their legs, waiting for the usual alarm and uproar of the dreadful dark. But there was nothing doing. So those Englishmen dozed off and towards dawn a lioness, with stealthy steps, came along and actually dragged one of her would-be slayers through the carriage window and carried him off to be devoured. Thereafter, all work on the line was stopped. The simple savage would not engage on any terms; and the British Government was forced to send out a mighty *shikar* who in time dealt with those man-eaters, and enabled the Uganda Railway to proceed in its developing mission. As every East African traveler knows, this line even now runs through a natural zoo, with herds of zebra, giraffes and even rhinos, elephants and lions visible from the windows of luxurious trains.

Long ago the lion vanished from Europe. Time was when he was taken in Thessaly and Thrace for barbaric shows in the Roman arena, where at one time 500 of the great maned cats would be seen in fearsome stunts, with men facing them on foot with nets and swords—to say nothing of the dreadful spectacle of Christian martyrs being loosed to the crouching brutes. Today in Africa one rarely sees more than seven or eight lions in a troop. Yet there was a time when a party of Dutch emigrant farmers in the Orange Free State could kill 249 of these superb beasts in a few months. Strange to say, little is known of their family life. The African hunter contradicts nearly every statement of the natural historian at home, and the scientist who writes of the desert monarch in a city study. Why should adult lions, in full possession of their power, suddenly take to feeding on carrion—gazing up into the blue to note where vultures hover over carcasses of oxen or antelopes, which the terrible tsetse fly has laid low? Why

Underwood & Underwood

**Comparable to no sound on earth is the roar of the lion—striking terror to the bravest human heart**

should other lions go for men only, ignoring all other prey? This is especially the case where one African tribe wars with another, burning villages and making outlawed vagabonds of the vanquished. How many human beings are even now killed and eaten each year by lions no one can say. Even white hunters, armed with high-velocity rifles, quite often come to grief. A case in point was that of George Grey, a brother of Sir Edward Grey, Foreign Minister of Great Britain during the war.

Publishers Photo Service

**To bag a lion is an achievement. For strength, courage, daring and ferocity this mighty cat, though in his last stronghold, stands alone**

Mr. Grey set out on horseback after lions with Sir Alfred Pease and his sons, whose ostrich camp at the Athi River had been regularly ravaged. Two huge males were sighted, and Mr. Grey spurred his mount to course one of them—a most dangerous thing to do. Suddenly the monster doubled back in twenty-foot springs, with the black-tipped tail held high, and growling savagely. One of the party, seeing Grey dismounting, fired a saving shot, but missed his leaping target. Grey himself fired at twenty yards raking the brute's shoulder; but it takes much more than that to stop a charging lion.

With the huge beast almost on him, Grey shot again, smashing two fangs and part of the jaw. Next moment the lion bore him to earth, and when the rest of the party got to the spot, lion and man were so mixed up that it was perilous to shoot at all. Three times did the brute return to maul and bite the hapless hunter before a head-shot could be placed to end the awful scene. The victim was terribly injured on the face and head, the arms, thighs, and back. As usual—and as Livingstone remarked long ago—such injury by the larger carnivora seldom inflicts pain on the human organism.

Missionaries and ivory-hunters, collectors of skins for museums, engineers, prospectors, and commercial men—all have been slain by lions. As for the African natives, no mortality figures exist; but the analogy of tigers in India has significance here. A single, man-eating tigress in the Province of Scinde terrorized a whole district for months, stopping all use of the main roads, and killing and devouring no fewer than 127 men, women and children. The official blue books records 4,218 human beings carried off and eaten by tigers in the Province of Bengal alone in a period of six years. All told, the "vengeance of the wild" in India amounts annually to 22,000 humans and 80,000 domestic cattle.

If such havoc is possible in a land of elaborate British rule and protection, what must be the human toll that falls to the lion in savage Africa, especially among the native tribes? These are no cowards. Such warlike blacks as the Masai, Kikuyu, and Kavirondo, will not hesitate to attack a pouncing lion with hoes in the hope of making him drop his screaming human prey. These people also organize regular *battues* in desperate cases where man-eaters menace an entire village with depopula-

tion. With spears and rawhide shields the young braves go forth on foot, accompanied by beaters with torches and drums. And when the man-eater turns at bay, the spectacle is one that the modern film magnate would give his eyes to screen. For it is not until the great cat has seized a man that the rest can close in with their great broad-bladed assegais—stabbing and shrieking, wrestling, dodging and throwing heavy weapons like javelins that impale the savage monster again and again.

The lion is not a prolific breeder; the female bears cubs perhaps once in three years. Therefore the extermination of the species can only be a question of time, now that we hear of automobiles all through Uganda, grants for schools and teachers, and motor dispensaries and maternity centers in regions which yesterday were the lion's own domain.

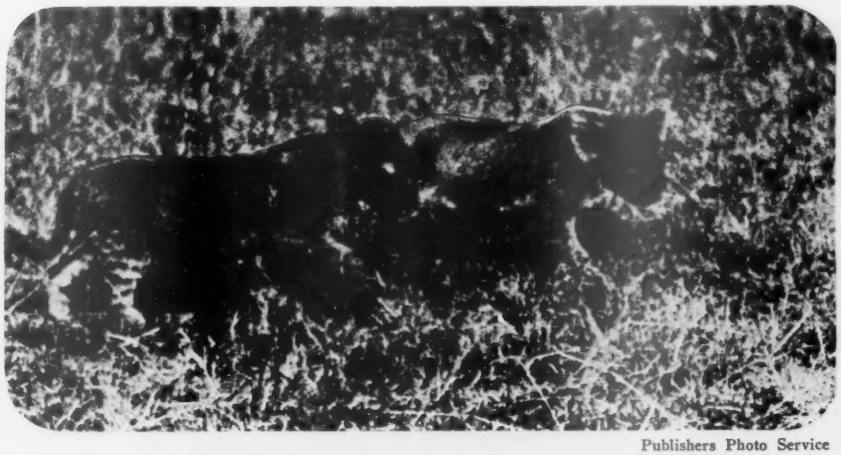
In a troop of five, there may be only one female, yet no hunter has ever seen or even heard of lions fighting for a mate. They do fight, and to the death; but meat, and not marriage is the cause of it. And the period for bearing young seems to be curiously brief. From two to four cubs are born after about four months' gestation; and at four months these are weaned, usually in a dense thicket close to water. But even before this process the young lions have been "blooded" by the parents, whom they accompany in all hunts. At one year old, when the large canine teeth are grown, important lessons are given to youngsters among the village sheep and goats—or even with women and children of the local tribe. In such affairs the adult lions look on while their progeny exercise fangs and claws upon a defenseless prey.

Most artists go wrong in portraying the lion in his native habitat. He never stalks along with majestic head and thick mane held high; his invariable gait is a loose shuffle, with the massive head held well below the spine. Lions of the north tend to grow bigger, lighter in color and more lightly maned than those of, say, Rhodesia or the Transvaal — where, by the way, this grand beast is now very scarce. In Bechuanaland elephants and rhinos are already as extinct as the wild buffalo in the United States; and the vast herds of zebra, eland, oryx, kudu, and other great antelopes, have dwindled to a few scattered hartebeests, blesboks, and gemsboks. The high veldts of the South present today to the naturalist or sportsman a dreary waste, more devoid of animal life than any other sparsely peopled region in the world.

Underwood & Underwood

**Enraged, the African lioness bellows her terrifying challenge, defying the whole world of beasts**

This is the inevitable result of Africa's development, more especially since the World War, and the activities of hunters armed with modern weapons of great power and precision. In six weeks the late Frederick C. Selous laid low 190 bull elephants; and the Uganda Railway actually sought to attract visitors by advertising that lions and great game might be shot from car windows of their trains.



Publishers Photo Service

**This remarkable photograph was made of wild lions roaming the prairie—strangely enough, entirely unaware of the presence of the cameraman**

The Grand Hotel, at Mombasa, announced that $150 would cover a month's hunt, allowing one white *shikari* as a guide, two native gun-bearers, a cook and valet, with thirty porters, four tent men and an interpreter speaking the Swahili and Haussa tongues. This tariff is now much higher.

From the same hotel to the Athi River is 300 miles, and

once there, the sportsman can hunt to the extent of his $250 game license. This allows two elephants to be killed, with tusk ivory of not less than sixty pounds. Also one buffalo, two rhinos, two hippos, two zebras and thirty-four antelopes, ranging in size from the kudu—as big as an ox—to the fleet gazelles of the plain.

Today a chain of first-class hotels and rest houses await the gunman all the way from the Indian Ocean to the source of the Nile, where a change is made into floating houseboats of astonishing luxury.

It will be noted that no license is needed to kill the king of beasts. Therefore he is bound to disappear, even as the elephant, rhinoceros, and giraffe are fast disappearing. For these great beasts cannot co-exist with modern civilization. A small herd of about one hundred wild elephants were long conserved, even in Cape Colony itself. But their depredations upon farms and cultivated lands were so ruinous and extensive that deputations waited upon the South African Government praying for the extermination of these hungry "steam-rollers."

As for the lion, every man's hand—white and black—is against him. For strength, courage, daring and ferocity, this mighty cat stands alone. Buffalo and leopard may often be more dangerous in the charge, but neither of these brutes will leap out of the dark upon sleeping men as the lion does.

Perhaps twice a week the lion feeds. Disturb him at his meat, and he may growl and bound off into the nearest cover. Or he may meditate mischief, lashing that black-tipped tail from side to side, then swinging it erect for a headlong charge, with all four sets of terrible claws out of their velvet sheaths. The speed of the charging bounds equals that of a galloping horse. The brute's eyes emit flame with a fury impossible to realize until seen. The great mane is bristling up like a stark aureola, and short, thunderous growls continue till the lion is right on his prey. No animal that lives—with the possible exception of the elephant—can withstand such an assault.

All wild animals seem to accept the king of beasts and the terrible tribute he exacts from them all. When he springs and kills at one stroke, there may be a moment's panic in the browsing herd. But when the lion hauls his prey away—he never eats on the spot—all the survivors resume their eating, drinking and courting as though nothing extraordinary had happened. Yet a white hunter would stampede them.

Domestic animals react in different ways to the presence of lions. Donkeys appear to be indifferent; horses show vivid fright; draught oxen will sigh heavily, and then go mad beyond all control. Some dogs will approach a lion, barking bravely; others will whimper pitifully. A hunting troop will run mute as hounds on a fox's trail, following the spoor of buffalo or zebra—the lion's favorite prey. When the herd is reached, the warrior lions take up strategic posts down-wind, while lesser beasts turn the quarry towards the grim ambush that awaits them. Oxen, great antelopes and buffalo cows are killed in a special way. The lion leaps on the left side, to seize the snout with one taloned paw and the upper shoulder with another. Then the head is dragged down sideways so as to break the huge animal's neck.

It has long been maintained that a man up a tree was safe from a pursuing lion. It is now certain that these huge cats can and do go up quite high trees after the native gatherers of gum. No rules bind the lion. Even in a country teeming with wild game, the bold troop will attack man or his span of oxen in broad day. It is said also that the regular and inveterate man-eater is an old lion whose power is on the wane, and whose teeth and claws are the worse for a lifetime of wicked wear. There is much truth in this; yet there have been many cases where a ten-foot monster of only five years, and in his full prime, took to an exclusive diet of human beings.

No more appalling sound is known on our living earth than the roaring chant of a troop of lions. It reaches camp as our "black boys" are feasting by the fire, singing or babbling like children under the blazing stars. Camp gaiety ceases as though a meteor had fallen, and terror takes the place of mirth, with eyes of appeal on the white protector and his battery of explosive engines that bring down even the mighty elephant in a flash and a puff.

There are lions abroad tonight, ruthless as death; frigid in purpose, daring and strong. Another high-pitched boom—raucous and shattering as from some epic brazen trumpet, dwindling to a series of hoarse, detonating grunts.

Perhaps a dozen full-grown lions are on their way down to drink after a colossal kill and all-night gorging of meat. Suddenly one will halt to breathe out an awesome roar that rolls and throbs for miles over the silent wilderness. As the lion draws in another great breath to repeat, a second lion takes up the challenge. Then a third, a fourth and so on, until the very firmament seems to vibrate and tremble as with shattering contact with physical powers. There is nothing like it to strike awe and fear into the bravest heart; it is the authentic voice of a true king of beasts.

In all the wild this majestic creature has no enemy but man; yet, strange to say, he often comes to ignominous grief through his love for porcupine flesh! Many lions lose their lives through those long stiff quills sticking into the pads that protect their claws—or even into their greedy throats.

In all ages the lion has been the emblem of quenchless courage and strength, dignity and destructiveness. Seven hundred terms distinguish him in the Arab literature. He is referred to over sixty times in the Homeric epics; and in our own Bible, this magnificent beast figures all the way through from Genesis to Revelation: "The king's wrath is as the roaring of a lion!"

And now his last frontiers are receding. In India today lions are only found in Kathiawar. "By the waters of Babylon" you will listen in vain for that awful roar. You may take a train from Cape Town to the Zambesi without passing the fresh spoor of a lion. East Africa was the last citadel of this king of beasts; and now new railroads to the Victoria Nyanza and Belgian Congo, together with new human settlements and towns, bid fair to wipe out the lion altogether, leaving him to survive only in heraldic devices as the symbol of majesty and sovereign strength.

# X-Raying Trees

## Experiments May Open the Window to Inner Tree Life

*By* T. P. Maloy *and* R. B. Wilsey

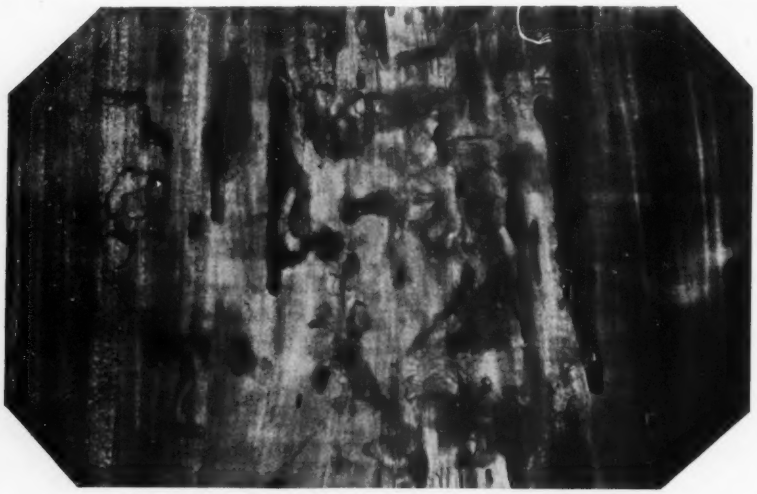
THREE years ago a motorist in Rochester, New York, stopped his car at the curb to await the passage of a storm. A few minutes later he was killed when a large tree, blown over by the wind, crashed down upon the automobile. As a result of this accident the city was sued successfully for a considerable sum in damages.

The tree was an old sugar maple with wide spreading branches and an abundance of healthy green foliage. The usual precautions had been taken to assure that the tree was safe. Just three months before the accident, this tree, with a number of others in this locality, had been carefully inspected by four experienced tree men. Of the group of about thirty trees, thirteen were condemned and removed, but this particular tree was pronounced safe and allowed to stand. It appeared healthy in all respects and showed no signs that would arouse suspicion as to its safety. If such signs had been observed, borings with an auger would have been taken to test more fully its condition; but in view of its healthy outward appearance, this precaution was deemed unnecessary.

Inspection of trees by boring is often very helpful, but obviously this method is subject to serious limitations. It gives information only at the points where the boring is made, and to obtain any fair idea of the extent of internal decay might easily require so many borings as to endanger the strength of the tree. It is not uncommon to find that a tree pronounced safe by boring tests shows dangerous weaknesses when the tree is cut down.

The esthetic value of street and other shade trees makes

**Through the use of the X-ray, science throws her light into the tree and portrays the condition of the wood beneath the bark of living trees. All ready to shoot—the X-ray machine is mounted in a box in position for radiographing the tree**



**The X-ray reveals live borers within their own subterranean galleries in a decayed log.**

one hesitate to remove them without definite evidence that they are dangerous. The proposal to cut down an apparently healthy and beautiful tree generally arouses a most violent protest from nearby property owners.

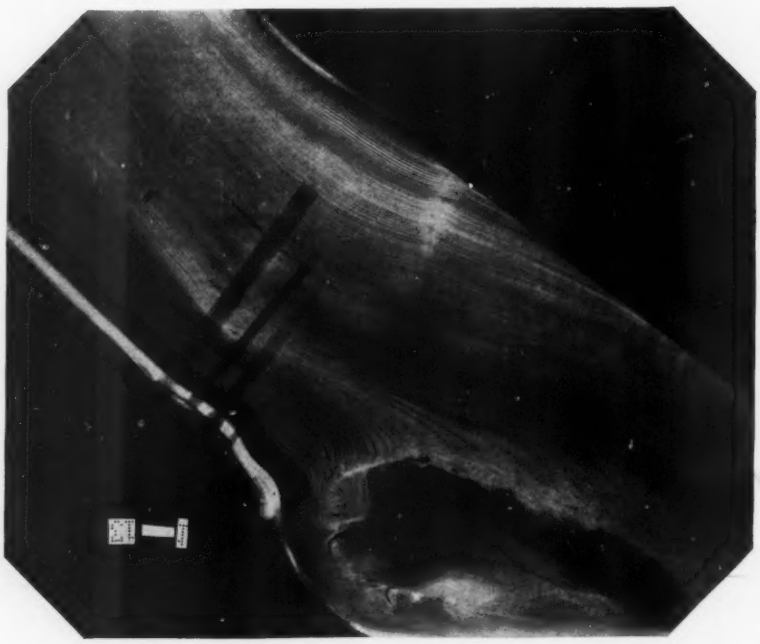
It is evident that there is a real need for a more precise method of examining trees for internal defects, and it occurred to us that X-rays might afford such a method for the internal examination of trees provided the method were practicable. Accordingly, plans were made to try X-rays for this purpose, and if the results proved satisfactory, to attempt to make such an examination available as a routine procedure. These experiments are not yet completed, but on account of the interest displayed in them, it was decided to describe the progress already made.

Since their discovery over thirty years ago, X-rays have been used to examine many materials for internal structure or defects. Wood is relatively transparent to X-rays, and investigators have found that they can disclose such faults as knots, cavities, worm holes and metallic inclusions. In England during the war, X-rays were found useful in examining the wooden parts of airplanes for defects in both material and workmanship. So far as the authors are aware, no one has previously attempted the X-ray examination of live trees.

Preliminary tests were made by bringing into the laboratory logs cut from trees. X-ray photographs were made and the logs cut into sections to study the relation between the X-ray appearance and the type of defect. In one of the logs a cavity was quite clear. The log also showed a knot, and around this knot were dark areas which proved to be small cavities. The grain of the wood showed to some extent, but in larger logs little indication of the grain was apparent. Sound wood generally disclosed little or no detail, whereas cavities or decayed portions showed as darker areas in the film. Even a moderate degree of decay which weakened the wood without affecting its apparent solidity showed clearly in the photographs.

Preparations were then made to make X-ray photographs of live trees. The principal portions of an X-ray apparatus, a transformer and X-ray tube, were mounted in a large box, with apertures in one side for egress of the X-rays. The necessary controls were mounted in a separate portable cabinet. Arrangements were made to connect the X-ray machine to electric power lines at the locations selected for the tests. The whole equipment was transported on a small truck, and a number of X-ray photographs were made of trees and electric light poles. Appearances interpreted as evidence of decay were found in several of these films, and in each case borings were made which substantiated the X-ray findings.

One of the difficulties in the radiography of any type of matter arises from the scattering of X-rays as they pass through the material. This scattering is especially serious in materials of light weight such as wood. A special device, called a Bucky diaphragm, is used to eliminate most of the scattered radiation reaching the film, and its effect is to



**Radiograph of a one-inch slab cut from a log, showing clearly cavitation and decay surrounding a knot.**

produce a much clearer and more contrasty picture. This device consists of a grid of parallel lead strips moved slowly in front of the film during the exposure. To avoid complications in the present experiments, a stationary grid was used in making the X-ray photographs out-of-doors. Since the radiographs of trees show very little detail, and indicate the existence of hollow portions, or decay, by dark areas on the film, the lines formed by shadows of the grid are not troublesome in the interpretation of the X-ray appearances. The logs radiographed in the laboratory were cut into longitudinal slabs one inch thick. By this means it was possible to see in reality the conditions within the log corresponding to the appearances in the X-ray film. Although the radiographs of the logs did not show any of the finer details or structure of the wood, they did show very fully the extent of decay and the manner in which it was distributed. There is no doubt that continued experience in the radiography of trees and comparison of the films with internal conditions observed in trees which were cut down would enable the tree expert to derive much detailed information from the X-ray photograph.

Radiographs were also made of the one-inch slabs cut from the logs. In the case of such thin slabs of wood the scattering of the X-rays has practically no effect upon the radiograph, and the detail shown is very striking; in fact the radiographs showed much more detail in the structure of the wood than is observable by viewing the slab with the naked eye. Several of the radiographs showed live borers within the wood, and by matching up the film with the slab, it was possible to locate these borers and to dig them out. It would seem that the X-ray examination of thin slabs and sections of trees should prove valuable in a laboratory study of tree disease and decay. It is a very simple matter to obtain excellent X-ray photographs of such sections with standard X-ray equipment.

The X-ray machines manufactured commercially are designed primarily for medical purposes, and until very recently none of these machines were at all suitable for the radiography of live trees. One reason for this is that the bulk and the weight of an X-ray machine are ordinarily too great to

**These radiographs show varying conditions. *Left*—The upper part shows where holes were drilled in the log; the lower part decay and cavitation around a knot. *Right*—A hole in the side of a log was centered over the film and shows as a dark area in the center. The mottled appearance indicates decayed wood. Though decay could be seen through the hole, the radiograph shows how far it had extended. The metal nails were put in as markers.**

**Searching a standing service pole for hidden decay at the ground level. Since these poles are generally of a light, dry wood, the X-rays easily penetrate and the possible checking of their condition in this way promises an important economic development**

permit ready portability. Another reason is that in the ordinary type of X-ray machine the high potential wires leading to the X-ray tube are exposed and present too great an electrical hazard for outdoor work. A few years ago an X-ray machine was devised which contained the transformer and X-ray tube submerged in oil within a grounded metal case. This eliminated the electrical hazard entirely. For a time this design was manufactured only in a dental X-ray unit with power too small for the examination of trees. Recently this type of unit has been made available in a size sufficiently large for the radiography of trees, and yet light and compact. In one form of this design the case containing the transformer and X-ray tube measures seven by nine by twenty-one inches and weighs eighty pounds The controls are in a light cabinet about half this size. For the radiography of trees some arrangement must be devised for clamping the transformer case to the tree in suitable position. A light block and tackle could be used to raise the outfit to various heights up the tree trunk. It is also possible to obtain small alternating current generators driven by a gasoline motor, which would make X-ray examination of trees possible in any location accessible to the motor truck. The whole equipment could be carried in a light delivery truck, and for the more accessible portions of the tree the X-ray machine could be handled satisfactorily by one man. One of these outfits has been purchased and plans are being made to adapt it to routine tree examinations. A report of the success of this equipment will be made as soon as it can be given a thorough trial.

The largest size of tree or pole which can be examined with such an X-ray equipment will depend upon a number of factors. Hard, dense woods are less easily penetrated by the X-rays than soft, light woods. In poles the absence of moisture makes it easier for X-rays to pass through the wood. The decayed portions of the tree are much more easily penetrated than the sound portions. Further experiments must be carried out in order to estimate these factors accurately. The principal difficulties in the X-ray examination of trees will occur with trees with a diameter greater than eighteen inches. The X-ray examination, however, will be of definite value even in the larger trees.

The failure of the X-rays to penetrate sufficiently would indicate the existence of at least a certain thickness of sound wood, while if the X-rays penetrated the trees easily, the proportion of sound wood must be relatively small. It should be possible to work out methods by which the thickness of sound wood could be reliably estimated by the roentgenographic method.

The wooden poles commonly used to support electric and telephone wires are of light, dry wood, and even the largest sizes should be readily penetrated by X-rays. Since any internal decay in such poles usually occurs near the ground level, the X-ray examination need normally be applied only at that part unless external signs indicate decay at other points. It would seem quite feasible to examine wooden poles on a large scale by the X-ray method. With convenient equipment to handle the X-ray outfit, one man, driving a light truck could stop at one pole after another, spending a few minutes at each one to make the X-ray exposure. The films made each day, or half day, would be brought to headquarters for development and examination. In this way the safety of many poles could be checked and information obtained concerning the condition of their interior soundness without any damage whatever to the pole. The possibilities along this line are being investigated, along with the problems of tree inspection, using the new equipment purchased especially for this work, and it is hoped that it will be possible to give an account of the results within a few months.

## *Test Your Skill with a Camera!*

*Can you take good pictures of trees, forests, or wild life? Have you unusual photographs of hunting, fishing, or other phases of forests or forest life in your collection? If so, The American Forestry Association offers an unusual opportunity for you to cash in on your ability with a camera—an opportunity that should appeal to the amateur. It is offering $200 in prizes for outdoor photographs, and the pictures may be submitted up to October 1, 1930.*

*The purpose of the contest is to bring to light unusual outdoor photographs, particularly by the photographer who takes pictures for the sport of it, and to encourage photography as one of the most fascinating of outdoor recreations. The contest is open to anyone in the United States and Canada. Turn to page 116 and read carefully the rules of the contest before submitting your selection of photographs.*

# The Public Lands from a Cowman's Viewpoint

By Dan D. Casement

TO MOST of us, who have used the open range in the old days and have since experienced the benefits of administration by the Federal Government of the grazing resources of the National Forests, the President's proposal to turn over to the states the surface of the remaining public domain lying within their borders came at first, I believe, as a distinct disappointment. Further consideration has convinced me at least that affirmative action should at once be taken on the President's proposal. Time and circumstances have undermined our reasons for holding a contrary view.

*This article is the third of a series now running in* American Forests and Forest Life *dealing with President's Hoover's proposal to turn over to the Western States 190,000,000 acres of unappropriated public lands. The two preceding articles—one by Representative Burton L. French, of Idaho, and the other by Arthur C. Ringland, of Washington, D. C., seriously questioned this proposal. Mr. Casement takes the opposite view, admitting that the public ranges are being rapidly destroyed by uncontrolled and heedless over-use but holding that the logical way to bring these abused lands under regulated control is through the states.*

*Mr. Casement is a stockman of wide western experience. For many years he has ranged stock on both the public lands and the National Forests and has been a close student of western range conditions.*—Editor.

These reasons had been based on our well-grounded faith in the Forest Service and on positive knowledge of the real success it had achieved in managing the grazing resources under its jurisdiction. Many of us felt that its power should be extended to cover the grazing on all unappropriated public lands, or that such power should be delegated to some federal authority as well conceived, as well organized, as honest and as devoted as in the Forest Service itself. We regarded as rank heresy any suggestion to deliver the lands to the states. The most urgent advocates of such a course were the states themselves and chronic and bitter opponents of the Forest Service.

Now all is quite different. Action on the question of disposal of the public lands has been delayed until the value of the lands—for grazing at least—has been frightfully impaired and in many cases almost totally destroyed. Partly in consequences of this fact, no doubt, chronic and bitter opposition to the Forest Service has abated almost entirely and the states, which formerly clamored loudest for possession of the public lands, now demand the privilege of a searching look into the mouth of the gift horse before assuming its ownership.

Today the situation as the stockman sees it is briefly this: Use of the open range is in most instances a liability rather than an asset to the grazer. Practically all of its most desirable parcels have passed to patent under a very sketchy construction of the various homestead and pre-emption acts. Intrinsically and considered each by itself, most of these so-called grazing homesteads are valueless in that their resources are inadequte to support a family. Largely abandoned by their owners, they are either leased for a song and used casually by neighboring stockmen or revert back to their natural state, except that the two rusty barbed wires, which once were stretched on widely spaced stakes to mark their boundaries (no one less optimistic than the entry man could dignify the device by calling it a fence), now usually repose in the sage and oakbrush to ensnare and destroy range stock.

In large, intact tracts open range now exists chiefly in the deserts of Nevada, Utah and Southwestern Wyoming, which still serve the uncertain and rather hazardous purpose of wintering large numbers of sheep. One might say—paradoxical as it may seem—that, so far as grazing is concerned, these inhospitable deserts now compose the most economically valuable portion of the Public Domain. However, their value, such as it is, is rapidly being destroyed by uncontrolled and heedless overuse. Nor will this destruction cease until the grazing of these abused lands is definitely controlled. As matters stand at present the logical way, apparently, to inaugurate such control is through the states. In this way it is probable that their surface can be most promptly made available for sale or lease to individuals or corporations.

When this is accomplished these lands will be consolidated with holdings already in private ownership to form ranches of appropriate size for profitable operation. Necessity will compel their owners to protect, restore and conserve their yield of forage and nature will in time heal the scars of erosion and check the present precipitous and destructive runoff of the rainfall.

There now are in the eleven principal public-land states 188,900,000 acres of open public lands, 46,700,000 acres ceded to the states for school purposes, and 79,200,000 acres granted to railroads. These railroad lands are largely unproductive of revenue to their owners and are in great part subject to the same sort of abuse as the public lands, because they are interspersed with them in checkerboard pattern and thus can not be legally fenced and protected in tracts sufficiently large to make them leasable for grazing.

Ex-Senator Dixon of Montana has recently pointed out that seven of these states received last year from their 30,000,000 acres of state land revenues totaling $2,814,000.

It is reasonable to believe that this sum would be trebled if to their present holdings were added the 76,800,000 acres of remaining public lands within the borders of these seven states. They already have the necessary administrative machinery for handling the lands. Surely they will not long hesitate to accept them.

An able commission to investigate and report on the whole question of the Public Domain has already been appointed by the President. This commission, headed by James R. Garfield, now awaits an appropriation by Congress to enable it to perform its duties. This should be immediately forthcoming. Surveys should be completed by the government and selections should be made by the railroads of the residue of their former grants. Then the balance of the Public Domain beyond the limits of National Forests and Parks, so far as its surface is concerned, should be ceded to the states.

This now appears to be the most hopeful and logical solution of a question of great moment to all of us which we have persistently bungled from the beginning.

# Boy Scouts to Preserve Native Nut Trees

## *American Forestry Association Raises Fund for a Five-Year Project*

THE raising of a fund of $10,000 during the closing weeks of 1929, to be used in furthering the forestry activities of the Boy Scouts of America, was announced by The American Forestry Association on January 14. The fund, it is stated, will make possible a five-year project whereby boy scouts throughout the country under organized leadership will locate native nut trees of historical association, gather the nuts and redistribute them for planting by scout troops in other states. This contemplated activity is the outgrowth of the work of scouts who, during the past few years, have gathered walnuts from trees at Mount Vernon and Arlington Cemetery and sent them for planting to scouts in other parts of the country. The new project will be nation-wide in scope and will be conducted under the cooperative leadership of the Boy Scouts of America, The American Forestry Association, the United States Department of Agriculture, the Northern Nut Growers Association and a representative of those who have contributed to the undertaking.

Under the five-year project plan boy scout troops in different regions will locate bearing nut trees on historical locations, such as Lincoln's old home, Washington's birthplace, the battlefield at Gettysburg, Valley Forge, etc. The scouts will be given leads to historic nut trees by the Department of Agriculture, state foresters, historical societies and others. During "nutting time," in the fall of the year, the boys will gather a supply of nuts from the historical trees and ship them to the Experimental Farm of the United States Department of Agriculture at Arlington, Virginia, where the nuts will be sorted, graded, tested and hulled. Under the direction of national headquarters of Boy Scouts of America, the supply of nuts will be allotted to scout troops in regions in which the trees are adapted. Each troop will then plant its quota of nuts under a pre-arranged local planting plan. Prepared instructions for harvesting, packing and shipping the nuts and information on planting and caring for the young seedlings will accompany each shipment and cooperation on the part of state forestry departments in giving the boys instructions on the ground is to be enlisted. Those in charge of the project anticipate that through the organized effort the boy scouts will plant at least a million nut trees a year and at the same time engage in an outdoor activity of the finest character.

Preservation of America's native nut trees, it is pointed out, is of vital importance. In years past the country was rich in trees that furnished sweet nuts each fall and provided healthful and unlimited pleasure to boys during "nutting time." The demand for walnut, hickory and wood from other nut species, however, together with the clearing of land for farms, has reduced the supply of native nut trees to a point threatening their extermination. The enthusiasm with which the boy scouts have handled and planted the small quantities of nuts from Mount Vernon and Arlington Cemetery, it is declared, assures the project of being a national activity of tremendous significance and accomplishment.

The undertaking is to be known officially as the "Nut Seed and Tree Planting Project of the Boys Scouts of America" and its stated objectives are to create among the boys of the country an aggressive, intelligent and properly directed nation-wide interest in planting tree seeds of highly useful species; to bring about the actual planting and growing of large numbers of such trees throughout the entire country; to arouse patriotic interest in historical grounds and to stimulate and encourage the obtaining of maximum services from the trees planted. Control of the project will be directed by a council of five members made up of representatives from each of the sponsoring and cooperating groups. General administration of the project will center in The American Forestry Association, through whose efforts the five-year budget was provided. As the work proceeds further effort will be made to enlarge the budget in order still further to expand the project's activities. The names of donors who have made the budget possible are:

W. K. Kellogg, Mr. and Mrs. Edward Bok, Frank L. Babbott, Miss Mabel Boardman, E. W. Lafrentz, E. G. Buckland, F. S. Bell, Edgar Friedlander, Mortimer L.

(*Continuing on page* 128)

# The Hall of Fame for Trees

## THE DILWORTHTOWN OAK IN PENNSYLVANIA

About a mile west of Dilworthtown, in Chester County, Pennsylvania, and on the Brandywine Battlefield near Washington's Headquarters, where some of the fiercest fighting of the War for Independence took place, stands the Dilworthtown Oak. More than three hundred years old, this tree patriarch has a circumference of twenty-two feet, one foot above the ground, while at three feet the circumference is eighteen feet. It towers nearly eighty-five feet above the broad meadow-lands of Chester County, and has a spread of one hundred and ten feet. There are six main branches, and the lowest limb, five feet above the ground, has a circumference of nine feet, two feet from the main trunk. These great lower limbs are beginning to show decay.

THE DILWORTHTOWN OAK

Tradition has it that two British spies were hung on one of the lower west branches of this old oak, and it undoubtedly witnessed some of the severest fighting that took place in the vicinity of the famous Birmingham Meeting House on the Brandywine Battlefield.

While the tree is in a good state of preservation there is a hint of decay in some of the lower branches. The residents of Chester County, however, have started a movement to care for it. A few years ago a number of State Foresters visited the tree and marveled at its size and state of preservation after having weathered the gales and storms of several centuries without care. The Dilworthtown Oak was nominated for the Hall of Fame for Trees by C. H. Thomas, of Kennett Square, Pennsylvania, to whom we are also indebted for the photograph.

**The Timber Wolf**

# *How Fast Can Animals Think?*

By JOHN A. HOPE

*Illustrated with etchings by Hans Kleiber*

*This tale of the quick wit and nimble legs of the fox as opposed to the cautious, suspicious mind and great strength of the wolf is reprinted by special permission from the "Illustrated Canadian Forest and Outdoors". It is a story that every student of wild life, including the hunter and outdoor enthusiast, will read with profitable interest.*—EDITOR.

FROM time to time down the years discussion arises as to the relative cunning of the wolf or the fox—which is gifted with and displays the most acute cunning on the spur of the moment in the face of danger.

I have never seen this more or less involved argument settled to the conviction of all concerned. Therefore it is still an open question. Nor will it be settled by the writer; I merely intend to give here my own personal experiences with the fox from boyhood, and the timber-wolf for some 40 years in the huge unbroken forests of eastern—and forested mountainous regions of western—Canada, leaving the reader to decide for himself.

Both quadrupeds are carnivorous. Both in nature and habits are nocturnal, marvelously keen of ear and nose, but deficient in the same keenness of eye in the light of day. Both are gifted with a more acutely intelligent cunning in self-preservation than any other species of wild life, with the exception of the brown Asiatic rat.

In Biblical times the fox was known as a very cunning animal. He is so known today. So, too, was the wolf in the days of Rome—probably still further back in history also.

In all arguments I have read for and against, curiously enough, two leading points were overlooked:

First, the very considerable difference in weight of body and brain of the two animals;

Second, each depends for safety at all times, and more especially in the struggle for life, on two divergent phases of woods strategy.

With regard to the first—is a smaller brain intellectually

on a par with a larger? To the second—The reader must judge for himself in which phase of woodcraft, in his or her opinion, the most cunning is displayed under all conditions, to award first prize.

Personally, I have a sincere admiration and respect for both.

Take the timber wolf: In the eastern forests of Quebec and Ontario I have seen only one pack in daylight, with a mere glimpse of a second under a full moon, though I was often surrounded by several packs winter after winter in succession. And only one lone wolf across a canyon at timber line in the British Columbia Rockies. And in this respect I am not alone.

Whether from instinct, or from senses acutely developed, or from a sixth sense in man, I know not. Something has, nevertheless, warned me time and again when I was in close contact with a pack, though I neither saw them nor their trail, heard or "winded" them. (A pack of wolves that has recently passed leaves a heavy musty taint, especially on a close, damp atmosphere.) But the wolves certainly knew I was in their vicinity, though out of sight and several hundred feet distant in thick timber, for on coming to a small knoll on the level forest floor I have counted in the snow the freshly vacated beds of a full pack.

Some twenty years ago, in Northern Ontario, I was kneeling down setting a trap, when a deer, sped on the wings of fear as written in its eyes and action, passed a few feet from my side, fleeing from a pack of wolves which were giving tongue some quarter of a mile in the rear. Anxious and keenly alive to the possibility of a shot or two at close quarters, I crouched down beside the trap with every sense on the alert. Nearer and nearer, as the seconds passed, came the pack on the deer's trail, and by the sounds of the different tongues it was well strung out. Just as I expected that the leaders would emerge into plain sight under the arches of the conifers, they suddenly ceased to give tongue, followed an instant later by those in the rear. Dead silence followed—but no wolves!

I was amazed, to say the least! Thirty degrees below zero, perfectly calm, not sufficient breeze, in fact, to stir a conifer leaf, myself crouched in the snow behind a big downfall, complete silence all around me in the forest!

**Black Fox**

Was it an instinctive knowledge that warned them of unseen danger? A natural cunning unknown to man? Or have they, too, a sixth sense?

A wolf invariably fights shy of steel traps, dead falls, poisoned bait and other instruments set for his capture—and generally successfully—even though no human taint be pres-

ent. Nor will he, as a rule, cross or run along a snowshoe trail made by man, even when this trail cuts in between him and a previous kill he is anxious to dine off in the dark hours. No! Knowing apparently that this track made by a snowshoe is foreign to his territory, his native caution comes into play.

(I have pointed out this characteristic to well-known hunters from across the southern border, who have sometimes accompanied me on wolf hunts.)

A wolf when pursued by dog or pack of hounds depends on speed and endurance to evade capture, and if in danger of capture at the end of a run in an eastern forest, on treeless foothills, or open prairie, will turn to fight with his formidable canine teeth with a snarling, savage courage that commands respect! Few dogs, even when possessed of the same courage, speed, endurance, with the same strength and terrible jaws and canine teeth, come off victorious in a no-quarter fight! And from one to three out of a pack of hounds will be badly cut up before a lone wolf surrenders in death. In these runs ahead of dogs the wolf rarely seems to think of evading capture and death by strategy—by escaping down a hole leading underground or into a rock cave—perhaps up a hollow tree large enough, or by springing upward on a thickly branched tree and clambering from branch to branch close to the bole. Above all, like the cat, it rarely, if ever, takes to water to throw dogs off its scent.

And the fox. In the same years east and west I have seen many scores of foxes by daylight, both while walking quietly through the forest, and when resting and—curiously enough—smoking my pipe! From both positions I have picked off with the rifle many of them without their ever seeing me or knowing from whence death came. The fox I have caught within 20 hours in steel traps set with bare hands and covered over with dry grass, moss or earth, in temperate weather—no bait used. The same conditions apply to poisoned bait (a rabbit's liver, which they are very fond of) and equally effective in the same length of time—and thought nothing of my success.

And a fox will not hesitate to run along the tracks made by snowshoes or in the prints made by boots on wet, bare ground.

A fox when pursued by a dog or pack of hounds does not depend on speed and endurance to evade capture. Quite the contrary. From the moment a dog picks up its scent and forces it to break for safety, it utilizes every bit of cover on its run for life to twist and turn, outflank and break back, head for the nearest lake or river, spring in and swim across, paddle up or down small streams for miles if necessary to throw hounds off its scent—and do it successfully nine times out of ten. All badger earths and burrows large enough, caves, hollow trees, and the limbs of thickly branched trees (utilized by springing from one branch to the one above) are used when water fails in a run of miles in length. The fox, too, when overhauled will fight hard for its life; having a stout heart, but being smaller than any domestic dog as fast as itself, it is invariably killed and instantly torn to pieces by a pack of hounds.

Here we have two animals of the wild, each of different brain capacity, each noted down the ages for his intelligent cunning and woodcraft in outwitting man, but each along different lines. You are probably still in doubt, reader, as to which displays the deepest cunning in defense of life; perhaps, therefore, the following will help you to decide.

I was standing one day near a giant oak, hoary and moss-covered with age, in a natural forest of such giants on the east coast of Ireland, when presently the baying of a pack of hounds in full cry broke on my ears. Keeping perfectly quiet and under cover as the baying became closer, I presently espied a much mud-bespattered fox, with brush trailing on the ground—a sign of complete exhaustion—slipping furtively in and out among the undergrowth and heading toward the aforesaid moss-covered tree. This tree was heavily branched, with limbs stretching far out all around it, one in particular sweeping down to within about eight feet of the ground. Without a second's hesitation, nearly exhausted Reynard—I learned subsequently it had come at a fast clip over 16 miles of a waterless country with 18 couples of hounds on its trail—sprang with a single bound up onto this branch, ran up its slope to the trunk, sprang up to the next limb, and so up to the top to a fork made by three branches, where he crouched, leaving only the tip of nose showing on one side and tip of brush on the other.

"Sanctuary!" I murmured to myself, "for she deserves it!" It was a native greyhound vixen.

A half minute later the leaders of the pack broke through the underbrush, came under the limb, lost the scent, searched in all directions for what was impossible to find, then lay down with tongues lolling out. Then came the huntsman and one whipper-in, with some half score of gentlemen in red coats and white breeches, and one much-bedraggled lady bringing up the rear.

As the brush is always presented to the first lady up at a kill, I was somewhat dubious about sanctuary being allowed the exhausted vixen.

"Hounds at fault—quarry gone to ground!" shouted the huntsman in a tone of regret to the others.

"No!" I replied, stepping from behind another oak; "it is not underground!"

"Hullo! Why, it's a keeper!" in surprise. Recovering himself—"Hounds do not lie, keeper!" he said, in a sharp, gruff tone.

"Quite so. Nevertheless, I repeat, the fox is not underground!"

"Where is it, then?" demanded the master of fox hounds, who had just ridden up.

"Overhead," I replied.

"Overhead!" staring at one another with looks of astonishment. Then, "Oh, absurd! Impossible! Foxes don't climb trees!"

"Trying to hold us up to ridicule, keeper?" demanded the M. F. H., riding toward me with fire in his eye.

"Quite the contrary. I repeat, your quarry is on the top of the tree you are under!" All eyes automatically turned upward in silence and searched among the giant limbs of the tree for their lost quarry, but in vain.

"No fox up there!" from one.

"How could there be?" from another.

"Why, of course not!" in a tone of contempt and with angry looks at me, from a young sprig of nobility still in his 'teens, "Never heard of a fox climbing a tree, you know!"

Nettled at this, which was equivalent to calling one a liar, I stepped up to the huntsman, and said: "Tell your whipper-in to dismount and pick up one of the hounds and hoist it up to that lowest limb. See what happens!"

The order was given without question, a hound caught and hoisted to the limb. Instantly his nose caught the taint on the moss, he gave tongue, tried to walk up the limb, failed, and fell to the ground with a thud. The rest of the pack, thoroughly excited, sprang to their feet and burst into full cry as they rushed to their mate under the limb.

"Well, I be d——d!" exclaimed the M. F. H., "the keeper was right!" and all eyes turned upward again, and again failed to see it.

Stepping well back from under the wide-spreading oak, I pointed to its top.

"There she is, gentlemen, curled up in that crotch where the three branches shoot up." Then I added quickly: "Sanctuary, please, sanctuary, for a greyhound vixen completely exhausted by a long, hard run!" I might remark here that the fox is among one of the keeper's worst enemies in the destruction of game birds.

"Afraid it can't be granted," from the M. F. H., but in a low tone of half decision, "the lady present will expect her brush, as is customary."

"Sanctuary, miss, for a vixen, please!" But as she only looked questionably at the faces around her, I added: "Come—sanctuary—and I'll flush you a fresh quarry in three minutes—and from another tree!"

Fully a hundred riders were now present, many of whom shouted:

"Agreed, keeper! Lead the way!"

By a bridlepath that wound in and out among the giant oaks I led them to the banks of a fairly large river. Leaning some halfway in a slanting position over the river grew an ash tree covered with a heavy growth of ivy. On the soft bark of the ivy stems I had previously noted from time to time marks of toe-nails where Reynard had ascended it, and the nose of my Labrador retriever had confirmed it.

Pointing to the tree, I asked the huntsman which way he wanted the fox to break cover. If from the one side—the wood—it will jump onto the opposite bank; if from the opposite bank it will come down the trunk and through the wood. Now I can't permit that—too many pheasants, and with this full moon the second flight of woodcock are dropping in from across the North Sea!

"Very well," he answered, "two minutes' grace to the fox, then I'll ford the river and lay the hounds on."

Slipping out of my coat and shooting boots, I started to ascend the tree, but before I was many feet up I heard the ivy leaves rustle overhead, followed by the thud of Reynard's feet on the opposite bank. A glimpse through the leaves showed the fox to be a male of the small French variety.

"A view hullo! Broke cover!" from a hundred throats.

Two minutes' grace up, the huntsmen and pack splashed across the river. The excited pack were lain on the scent and away all streamed in mad pursuit. Sport of kings, but cruel!

"Now," I soliloquized, as I sat down to fill my pipe, "that little male will lead the field a merry chase for some 15 minutes to Spring Creek, a tributary of the river, paddle down it, swim the river back to the ivy tree, catch my taint on its leaves, turn with furtive, fear-stricken eyes and disappear in the underbrush."

And that is precisely what it did! Did it, too, deserve sanctuary?

## GIRL WINS OKLAHOMA CONTEST FOR AMERICAN FORESTRY MEDAL

A fourteen-year-old girl, Jane E. Lyons, of Oklahoma City, has been awarded first honors in the state-wide forestry contest, conducted under the auspices of the Oklahoma Forest Commission, for the bronze medal offered by The American Forestry Association. The presentation was made late in December by Harry B. Cordell, president of the State Board of Agriculture and chairman of the Forestry Commission at the State Capitol.

The contest was for the best essay on "The Part Forestry Can Play in the Development of Oklahoma." The winning essay treated the subject in three phases: The value of trees from the standpoint of beautifying cities, towns and farms; the industrial value of forests as timber; and the economic value of forests to agriculture as a means of preventing soil erosion.

In addition to winning the personal medal, Miss Lyons won for her school the large, handsome bronze medal offered by the Association to the winning school—in this case the Harding Junior High School. The large medal will be on display until another school captures it or until it has been won by the same school three times.

# *Song of the Skis*

By Charles Grenville Wilson

*This is the song that the slim skis sing as they hiss through the crystal snow,*
*When the air is as keen as a Spanish blade from the breath of the Arctic floe,*
*And the runner sways like a young white birch, or a Hindu dancing girl,*
*And the wind flings up the frozen flakes that gleam like a diamond swirl,*
*And the tented spruce go leaping past like stags that are bayed by hounds,*
*And the runner's soul mounts like a bird, a falcon that knows no bounds.*

*"We were born where the blue hills kiss the skies, the swift west wind was our sire,*
*Our strength we sucked from the warm earth's breasts, from the sun we drew our fire;*
*Aeolus hung his harp in our leaves and gave us the joy to sing,*
*And Mercury touched us with his staff and gave us the eagle wing;*
*Endurance we drew from the hill's dark womb, and the wood's brook gave us mirth,*
*And cunning we learned from the slow sure iron that gave us our second birth."*

*This is the song that the slim skis sing as they plunge to the end of the run,*
*And spring to the air like a wild gazelle, or the silver lead from the gun,*
*And hurl through space like the great white swan o'er the wilderness winging high,*
*And soar in a long sweet sweeping arc as the pinioning eagles fly;*
*And the runner sheds the dross of earth and becomes half bird, half god,*
*Like a gorgeous thing with silken wings that was born a worm in a clod.*

*"We have watched the stars in the heavens wheel, and the glowing meteors dive,*
*And the comets rush through the awful void where the lesser planets hive;*
*And Pegasus browsed on our tops one night and told us of secrets rare,*
*And we've taken a lesson or two on flight from the fowl of the upper air;*
*From the lightning's flash, from the old earth's twist, and the sky lark mounting high,*
*From the sun, and the stars, and the green young moon, from these have we learned to fly!"*

# SNOW

*By* ELERS KOCH

THE primitive in America is disappearing, and along with it is going the great wilderness of the West and the sturdy pioneers who tamed it. Yet, a mid-winter trip today in the Lolo National Forest, in Montana, when four or five feet of snow covers the ground and when a man is dependent upon a back-pack for food and shelter, involves real pioneering under primitive conditions.

Twenty years ago, in the early days of the Forest Service, mid-winter adventures were not uncommon. We were young then, fond of snowshoeing and ever hungry to see new country. Consequently we made a great many trips, often for the sake of adventure alone.

It was in 1908 that Karl Woodward and I conceived the idea of a snowshoe expedition along the summit of the Bitterroot Mountains from Lolo Pass to Elk Meadow. It was mostly an adventure, although I wanted to study the possibilities of building a trail along the divide.

Forest Ranger Thayer met us at Lolo and the thirty miles up Lolo Creek to Hot Springs behind his shaggy team of cayuses was pure pleasure. There was not more than a foot of snow on the road, just enough for good sleighing. That evening we spent at Lolo Springs looking over our packs and making final arrangements. We proposed to take the Lolo Trail to Lolo Pass, then follow the timbered summit of the Bitterroot range easterly to Elk Meadow where we would strike an old trail leading down the ridge to the mouth of the South Fork of Lolo Creek. The trip involved less than forty miles and we were satisfied we could make it easily in four days, with three nights out.

We made careful preparations. I had a double California blanket weighing ten pounds which had seen many a camp fire up and down the Rockies. Woodward had a pair of army blankets. We carried a very light silk shelter tent, a great addition to comfort when sleeping in the open. Both of us had good web shoes. Our food supplies were simple, but just enough for three nights out—bacon, hardtack, rice, erbswurst, chocolate, raisins, tea, and sugar.

We were off at daylight the next morning, making Lolo Pass about noon. Then we began to climb rapidly and for seven hundred feet the snowshoeing was fairly good. As we neared the summit, however, we encountered loose snow which had absolutely no supporting capacity. Our snowshoes sank to the packed snow beneath and we had to plow through it. Our progress slumped to about half a mile an hour and it was middle afternoon when we topped the first summit.

The divide for some distance eastward was a broad ridge, heavily timbered with spruce and lodge-pole pine. It was impossible to see any distance. In fact it was impossible to find any of the monuments or blazes which marked the Montana-Idaho boundary on the summit—so deep was the snow. We were left with nothing to guide us but a map and our sense of direction.

We plowed along slowly throughout the afternoon, the packs dragging heavily on our shoulders and our legs weary with the constant pull of the snowshoes. The sky was overcast. Foolishly, neither of us had brought a compass, expecting to be guided by the topography of the country. As a result we were confused as to our direction on this flat, timbered divide.

Finally we became suspicious that we were working our way too far to the north and stopped at the first opening in the timber to take our bearings. Our suspicions were well founded. We were on a spur ridge about a mile from the main divide. This mistake fell heavily upon us and we decided to camp on the spur and retrace our steps the following morning. Our muscles ached and we were weary of mind. We handily found a camp site among a stand of dead lodgepole pines. We tramped down as much of the six feet of snow as was possible and shoveled a place for our camp and fire logs with our snow- (*Continuing on page* 103)

# Fires That Burn Deep

By B. F. Williamson
*President, Florida Forestry Association*

DON'T burn up your wealth and cry for more! Stop woods fires and the wealth will grow!

Dr. R. M. Barnette, a soil chemist with the Agricultural Experiment Station at Gainesville, Florida, and I have been taking core borings of soils down to forty-five inches. We found an island off the coast of Northeastern Florida with virgin pine that has not been burned for forty-two years, and were so impressed with the fertility of the soil down to a depth of forty-five inches that we found a similar area that had been burned every year for forty-two years. The unburned area was characterized by the large number of nutritive plants. Particularly did we find a native vetch that if killed by a severe winter, comes out again before the grass in the spring. On the burned area the grasses were coarse and none of this native vetch was found.

The more this matter was considered the more interesting it became. We examined the unburned area down to the mineral soil and found a deep layer of leaf mold, partly decomposed grass, and other organic matter. This surface organic material was estimated to amount to 26,249 pounds to the acre. We then made a careful examination at nine inches and determined the organic matter to be 76,260 pounds an acre. On the burned area, there were 40,500 pounds of organic matter at the same depths. Going to twenty-one inches on the unburned area, we found 53,440 pounds of organic matter an acre and on the burned area 24,440 pounds. At thirty-three inches, we found the unburned area contained 38,680 pounds of organic matter an acre and the burned area 17,960 pounds, while in the next layer down to forty-five inches the unburned area contained 24,280 pounds of organic matter an acre and the burned 14,760 pounds an acre.

The total organic matter in the soil down to forty-five inches on a burned acre, subtracted from the total organic matter on an acre of the unburned area, shows the destruction of 121,280 pounds of organic matter. Upon analysis we estimated that the accumulation of these forty-two years of burnings might have contained 1,126 pounds of nitrogen.

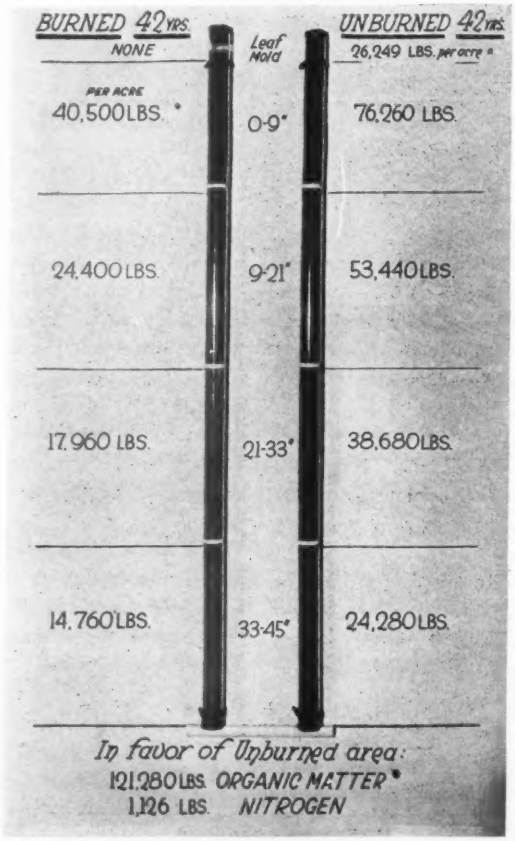
In other words, every year the fires had burned up more than 2,800 pounds of organic matter containing about twenty-eight pounds of nitrogen an acre. If this were purchased as nitrogen in commercial form it would cost about $4.00 an acre. That does not entirely repair the damage. There are other factors to be considered.

Dr. Barnette and others indicate that fire also destroys the tiny nitrogen fixing organisms which are constantly feeding on organic matter and converting it into plant food. Their importance is only beginning to be realized. This loss amounts to at least twenty pounds of nitrogen an acre every year in addition to the twenty-eight pounds of nitrogen already accounted for.

There are still other factors to consider. Organic matter is important to the growth of plant life. If soil dries out plants do not grow. We know from actual tests that soils rich in organic matter hold from five to seven times as much moisture as pure sand.

So we are looking at a greater problem than merely the growing of trees. When we burn the soil we destroy future wealth in the form of future plant life. If plant life is destroyed, human life cannot exist. In time, we would find ourselves in the condition of some oriental countries where plant life has been destroyed—where the wealth of the country and the benefits of its civilization have vanished with the loss of the soil.

Isn't this a question that should interest every man, woman and child in the present and future generation? If the banker knew that with a little precaution he could make four dollars and that by his neglect he is losing four dollars on every acre in his vicinity he would immediately figure that his balance sheet instead of showing four dollars plus would show four dollars minus, or an eight-dollar loss.




**THE RECORD**

**Soils from virgin pine lands in the South showing the depth of destruction caused by the burning of vital elements**

*Little Stories by the Men of the Southern Forestry Educational Project of The American Forestry Association Who are Carrying the Message of Forest Protection to the People of the South*

AFTER giving an afternoon show near Auburn, Mississippi, I drove over to a crossroads store where a number of men, both young and old, were gathered, discussing the motion picture I had shown and my lecture. After answering a number of questions put to me by the younger men, an old-timer edged over to where I was standing.

" 'Say, young feller,' he opened up, 'I'm seventy-five years old and been livin' in this community long past forty years. I've been burning the woods most of that time and I have still got good grasses and have been cuttin' some durn good timber. I don't believe that fires do the damage you and your pictures say they do, for if the young trees are killed as you say, why is it we got large timber to cut? Another thing, do you think you are doing any good with them movin' pictures you are giving? The way I see it, son, is that it is just another way to spend our money, and I bet you ain't doin' a durn bit of good.'

" 'Cap,' I replied 'you have been here a mighty long time. When you first came wasn't this country covered with trees—the same trees you have been cutting in the past twenty years?'

"He thought for a moment. 'It sure was, young feller.'

" 'Look at that field over there,' I said, pointing out over the sedge. 'Do you think a cow can produce milk on that broomsedge?'

" 'It's been there all the time,' was his reply, 'and I ain't seen any carpet grass or lespediza comin' in where there wasn't any fire.'

"At this juncture one of the younger men interrupted. 'If you'll come down to my place, Uncle John, I'll show you some carpet grass that has come in since I stopped burning. Another thing, my cattle are getting better every year.'

"Still Uncle John was unmoved. 'Well, you youngsters ain't goin' to do no good with your movin' pictures.'

"I looked over toward the schoolhouse on the edge of the sedge field. 'You admit you have been cutting trees for timber that were here when you came forty years ago,' I argued. 'You also admit that there is not as much timber here now as there was then. If your trees have vanished in the past forty years without protection they will do the same thing in the next forty years. What, then, will the children over there in the schoolhouse do for timber and wood when they grow up? What will their children do a hundred years from now?

" 'If fire hasn't killed the young trees what has happened to them? The things you saw in the pictures and the things I told you about forest-fire damage are facts. If you stop burning the woods now a new forest will spring up for the children. If you continue to burn there will be no trees of any value around here forty years from now.' Uncle John twisted his face in thought.

" 'Hadn't thought of that son. Them kids are goin' to need timber same as we have. And if what you say is true about fire killin' young trees, I reckon you can count me in—no more fires.' "—J. B. Toler, Lecturer and Motion Picture Operator, Mississippi.

**A CRUSADER IN ACTION**
**An outdoor motion picture show and lecture at a schoolhouse in the Florida backwoods**

"Negroes in the backwoods of Florida react in many ways to the appearance of the educational truck with its red panels and gold lettering. En route to Mayo, a little piney woods settlement, I stopped before a negro shack for road information. For several minutes I sounded my horn and shouted but no one appeared. Just as I was about to drive away a negro woman came running through the woods shouting and waving her hands.

" 'Mister,' she panted, 'Ah wants some mo' of that hair straightener which yo' sells.' "—W. L. MOORE, Lecturer and Motion Picture Operator, Florida.

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"According to some of the comments made following a motion picture program and lecture at a schoolhouse at Mason City, Florida, foresters have not yet learned all there is to know about the evils of woods burning. Following the program an old fellow approached the motion picture operator and lecturer.

" 'Son, I reckon you told and showed everything that will ever be known about burning the woods, but to my way of thinking you forgot one big thing,' he said. 'In the fall there's a certain kind of worm that falls from the pines and burrows in the ground about two inches. Well, when a fire comes along sometime during the spring these worms are burned up—and, by gosh, they are the best fish bait there ever was. So you see woods burning does more damage than you told about—it destroys fish bait.'

"After giving a show at Smith's Creek School an elderly gentleman, who had been sitting in the back of the room during the performance, came up to me and, after shaking my hand, said:

" 'Young feller, I've been burnin' the woods all my life to keep the land from turnin' into swamp, but seein' your picture and hearin' your talk I'm never goin' to set out another fire as long as I live. I feel different tonight concernin' woods fires than I ever did before.'

"Smith Creek is fifteen miles west of Sopchoppy, and represents as backward a community as can be found in this part of Florida. The man even went so far as to ask me for posters to put up on his land. The attitude of this man typifies that of many others who have never known of the evils of burning the woods."—WESLEY HOTTENSTEIN, Lecturer and Motion Picture Operator, Florida.

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"At Monticello, Georgia, an old negro sat attentively throughout a lecture, exhibiting unusual interest in the lantern slides depicting forest-fire damage. When it was all over he approached the lecturer.

" 'Cap'n, suh,' he said, 'Ah nevah know firin' de woods burned up so many things. Ah sees now why de buzzards always follow de cows on a range dat has been burned. Dey know it won't be long 'til dey hab meat.' "—CARL B. WILSON, Unit Director, Georgia.

## AND THE RESULTS?

*What happens in the rural communities of Georgia, Florida and Mississippi following a forest fire prevention motion picture show and lecture by members of the Southern Forestry Educational Project of The American Forestry Association? There is no way of knowing definitely the exact action that follows in most cases, but that seeds for thought have taken root is evidenced in hundreds of letters. Excerpts from a few of these letters received by the Association are printed below.*

"I can hardly express our appreciation of the lessons taught and the pleasure afforded by the motion picture given in our school. I am sure much good will come of it in the interest created. The picture is vitally productive, economically and educationally, and is an inspiration for civic betterment."—MRS. A. C. FOWLER, Jeff Davis School, Thomaston, Georgia.

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"The entire community in which I am teaching had the pleasure of seeing the motion picture *Pardners,* made by the American Forestry Association. It was enjoyed by all, and I feel sure that it made a lasting impression."—MISS RUBY HUMPHRIES, Airline School, Mayo, Florida.

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"I am glad of the opportunity of expressing my appreciation for giving such an instructive motion picture on the conservation of our forests. The community, especially the children, need more such concrete and impressive instructions. I am sure our boys and girls, as well as the adults, will profit by it."—MRS. E. W. CHILDS, Omaha, Georgia.

"I wish to express the appreciation of myself and the people of Echols County. The motion pictures were very good and the people of the county seemed to enjoy them very much. There are several good lessons brought out in *Pardners.* Approximately 1,000 people of this county saw that picture. Hope you will keep up the good work."—L. J. STRICKLAND, County Agent, Statenville, Georgia.

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"*Pardners* is a good show with a lesson well taught."—GUY COX, Mason School, Lake City, Florida.

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"Your motion pictures are worth a whole week of 'teacher talk.' It is a boon to set people thinking. Thank you for the good work you are doing."—*The Harris County* (Georgia) *Journal.*

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"We enjoyed the motion picture and lecture and hope that we can get some kind of forest protection in the future."—J. A. HOLDER, Pattison, Mississippi.

# EDITORIALS

## A New Weapon in the Beetle War

TEN years ago fighters of forest fires laughed at the idea that a portable pump with a line of hose to tap nearby water could be of any use in extinguishing fire in the timber. The ax, the mattock, the fire rake, and the crosscut saw were the only weapons worthy of a he-man fire-fighter. But the pump could not be laughed out of battle. It slipped into the front trenches and did a little sniping at the enemy Fire on its own account. Today, every modern, forest-fire organization has its quota of fire pumps, ready to be transported on wheels, on the backs of horses, or on the backs of men, as conditions may dictate.

Now comes the discovery that the portable pump may have another large field of service in protecting our forests from an enemy that ranks shoulder to shoulder with forest fire. In this issue, Mr. David Arrivee, Assistant Supervisor of the Targhee National Forest in Idaho, describes how portable pumps are being successfully used to stop a large scale infestation of pine beetles in lodge-pole pines. This infestation, originating several years ago in Montana, has been the despair of foresters and bug fighters who, handicapped by lack of funds, have been unable to stop it. Already the beetles have killed millions of trees, and in their eastward advance are threatening the Yellowstone National Park. The approved method of fighting the bugs has been to fell the infested trees and burn them, a highly laborious and expensive undertaking.

When the pine beetles spread southward into Idaho and invaded the Targhee National Forest, the officers of that forest rapidly cast about for more effective means of combat. The portable pump had been previously tried out on the bugs in Montana and discarded, but Mr. Arrivee and his men decided to give it another test. With pumps filled with kerosene and carried on the backs of men, they spotted the infested trees, liberally sprayed their trunks with kerosene and applied a match to the base of the trunk. The tree immediately burst into flames, whose heat roasted the beetles working beneath the thin bark of the lodge-pole pine. The method proved much swifter and less expensive than the old method of hand-felling and burning each tree. After two seasons use of pressure pumps and kerosene, the Targhee officers believe they have the pine beetles on their forest under control.

As Mr. Arrivee points out, however, the method is new and more experience will be necessary to determine the extent to which the pressure pump can be depended upon to rout the wood-boring bugs. That it will hardly be effective with thick-bark trees seems apparent, because the heat of surface burning is hardly sufficient to penetrate this bark and roast the bugs. But if the method proves applicable only to thin-bark trees, the pressure pump will have made a tremendous contribution to the cause of forest protection.

## Mr. Casement Sees It Through

The views of Mr. Dan D. Casement, as presented in his article "The Public Lands from a Cowman's Viewpoint," printed on page 83 of this magazine, will be read with interest. Mr. Casement is both a practical stockman and a student of western range conditions. That he looks at and through the public lands problem primarily from the standpoint of practical range management is to be concluded. At first opposed to the transfer of the Public Domain to the states, he now believes that the logical way to bring the public lands under range control is to make them available for sale or lease. This, he believes, can be most promptly accomplished by transferring the lands to the states.

As matters now stand, Mr. Casement declares, the open range has been so impaired or destroyed by misuse and overgrazing that in most instances it is a liability rather than an asset to the grazer. Furthermore, much of it is spotted by deserted homestead or preemption claims that make practical and profitable range mangement extremely difficult. But if these lands were available for stockmen to buy up or lease in large blocks, grazing administration would become a practical proposition and necessity would compel the stockman to protect, restore and conserve the yield of forage. Thus in the course of time, Mr. Casement believes, nature would heal the scars of erosion and check destructive run-off.

The checkerboarded character of much of the public land is undoubtedly a difficult phase of the question in many regions. But there are great areas of Public Domain in which this problem is not a serious factor and where private ownership of great areas may not best serve all public interests. It is highly questionable that placing the public lands in their

entirety in the hands of private individuals and corporations will effect protection and rehabilitation or assure the conservation program which all public interests require. That many areas because of innumerable claims and private holdings lend themselves to profitable range operation only by private ownership in large blocks is easily understood, but it would be a dangerous policy to apply to the Public Domain in its entirety. It not only would place public interests outside the control of the public but it unquestionably would work a hardship upon thousands of ranchmen who financially are unable to buy range land, particularly in competition with the large stockman. This is a further argument for the need of a survey of public range lands to determine the best policies for their conservation and management.

But assuming that private ownership is the proper solution for certain areas, one is forced to ask, why turn the lands over to the states to be sold? The public lands belong to all the people; the Federal Government is their agent. If it is desirable to sell certain lands, why should the Federal Government not sell directly?

# Timber Famine or Timber Phantom?

THAT the threat of timber famine long predicted for the United States is in a fair way to being dissipated by changes now taking shape in the chemical and industrial world of wood utilization is a belief shared by a considerable number of foresters and students of lumber economics. These men see in the changing and declining demand for lumber and the increasing possibilities of wood cellulose a day not far distant when it will be possible to meet as large a portion as may be necessary of the nation's lumber needs with cellulose products or other substitutes. To them a timber famine in the sense that the exhaustion of large-sized timber in this country will shake the nation's social and economic foundation is becoming more and more a timber phantom. They see, or at least profess to see, a shortage of large-sized timber overcome without injury to the industrial and social prosperity of the country.

To many foresters, however, these views are anathema, calculated to arrest the progress of forestry. Ever since forestry began in this country the day of timber shortage has been held up as a flaming sword for action. Predictions as to what would happen when the day of timber shortage arrived have been free and many. Following the War, the Forest Service published the now famous Capper report, which sent the phrase "timber famine" resounding throughout the country. Lumbermen were not wanting who challenged the predictions. They feared the cry of impending timber famine would bring about public control of their operation, but they could not disprove the calculations. Against the estimated remaining supply of timber plus its growing increment, the Forest Service balanced the nation's annual wood needs as shown by past and current figures of consumption. The contrast pointed indisputably to a national wood shortage in the early future.

That was ten years ago. Since then events have run counter to predictions. The lumber merchant no less than the forest economist has been brought face to face with the significant fact that during the greatest era of building construction and general prosperity the country has ever enjoyed lumber has failed to strengthen its hold on the consuming public. And this in spite of the fact that during the period lumber was never more plentiful, more closely priced, or more aggressively merchandized by the lumber manufacturers. Thus the nation's future hunger for wood in the form of sawn boards is cast into a limbo of uncertainty in which the specter of timber famine grows more and more indistinct to some who saw it clearly in years past.

Whether or not lumber in the form and volume of past usage is permanently on the wane as statistics can be made to show, it is difficult to share the concern of those who see in the trend a lessening of the importance of forestry. For forestry does not stand or fall on the fear of lumber shortage but on the soil value of tree crops as exemplified by a great variety of social and economic benefits. There is no danger that lumber will pass out completely or that wood in manifold forms will not be a marketable product, meeting by the evolution of refinement the competition of other products.

Forestry, no less than forest conservation, has been too long molded to the one mind that trees are merely boards for the saw mills—the nation must have them or perish. It will be a salutary thing for forestry to be purged of its lumber famine complex and to see and sell forests in a clearer perspective of diversified wood and land crops, conservers of soil and water, habitats of wild life, moderators of climate, providers of outdoor recreation.

In this age of progress, the industry that does not change is a sick or dying industry. An evolution in wood values and wood utilization ought to be welcomed as a symptom of healthy advance in the forest industries. The extent to which it will change present wood forms, the future only can unfold. The sawmill of today producing rough boards and beams may tomorrow be the factory utilizing trees young and old in the making of a score or more of products. The chemist penetrating the mysteries of wood cellulose may open a new world of forest values in which even this generation may live to see forest crops not only clothe but feed its children. These are not day dreams. The color of reality is coming out stronger and stronger in the test tubes. What an engaging vista these deep-moving changes should unfold to the forester. They enrich his whole profession. They give promise of forests grown on rotations of twenty to twenty-five years—grown and harvested under his hand and eye instead of in a long distant future that denies him the fruits of his labor and skill and clouds his endeavors with commercial uncertainty. To be sure, they shake his old traditions of silviculture but they must quicken his blood and his professional pride to be the first to see and meet the new day whenever and however it may come.

# Washington's Elm

## *At Berkeley Springs, West Virginia, Stands One of America's Most Historical Trees*

By J. C. Scott

IN the year of grace, 1747, the Right Honorable Thomas Lord Fairfax was possessed by grant from the King of England of certain lands in the wilderness lying west of the Blue Ridge Mountains, and extending from the headwaters of the River Cohongorutan, later called the Potomac, to the Ohio River. Being desirous of knowing the extent of his possessions and also their economic value, he engaged a young surveyor. This young man was George Washington.

In Washington's journal of this survey, under the date of 1747, an entry shows that he visited and was greatly impressed by the medicinal value, volume, and temperature of certain springs, in what is now West Virginia, that had long been known to the Indians for their value in the cure of diseases to which they were subject. Tradition has it that the land in the immediate vicinity of the springs was held neutral, and that members of different tribes, though at war, were allowed to use the water unmolested. The name "Medicine Waters" was given to these springs by the Indians, and this name is perpetuated in that of the Cacapon River, or "River of Medicine Waters." The junction of this river with the Potomac evidently served as a landmark to canoeing parties seeking the medicine waters, who landed somewhere near the confluence and transported their sick overland the remaining four miles. From this came the name "River of Medicine Waters." Shawnees, Tuscaroras, Delawares, Mingos, and members of nations as far north as the Hurons came here to be cured.

*A beauty spot at Berkeley Springs, West Virginia, presided over by the giant American Elm planted by George Washington when, as a young surveyor, first making his way, he examined the land holdings of Lord Fairfax.*

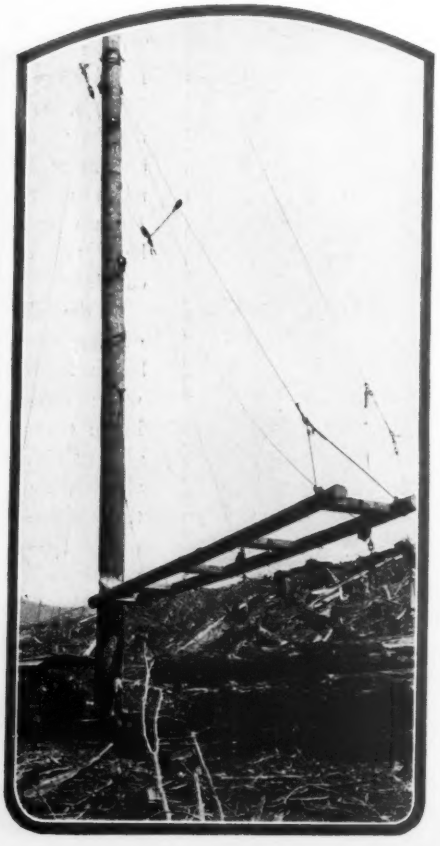
As the value of the water became known, white settlers began to visit and settle in the vicinity, and the settlement thus formed was known as Warm Springs. This name was retained until the year 1776. The Legislature of Virginia in that year passed an Act for the laying out of a town, and sale of lots for building purposes, and also set aside certain land adjoin-

ing the springs for the use of suffering humanity, and for that purpose only. Certain local geographical features yet have the town's old name, such as Warm Spring Road, Warm Spring Ridge and Warm Spring Run.

The name selected by the legislature for this town was Bath, from the city in England of that name, and this continues to be the legal designation, although it has been known for several decades as Berkeley Springs. Records show that Washington bought lots and built a residence in the town, and visited and spent at least a part of several seasons there. He superintended the laying out of the streets and lots, and the foresight and vision of this great man is shown by the results. The town has wide thoroughfares, one being ninety feet, with a general plan of great convenience and beauty.

At the intersection of the town's principal thoroughfare, Washington Street, and one marking the southern boundary of the grant of Lord Fairfax, and forming a corner to this grant, Washington planted a tree. This beautiful tree is an American or white elm, and belongs to that widely distributed family whose range is from Newfoundland, west to the Rockies, and South to Texas. This tree is very large, measuring twenty-one feet in circumference at its base and, branching at a height of twenty feet, covers approximately ten thousand square feet with its foliage. Beneath its spreading branches Indians have stalked and riflemen gathered to drill for the war of 1812. Jackson's footsore army disturbed its winter sleep as it went marching underneath. Within its shade great men have rested. Freemen and slaves have cooled a heated brow and lovers' vows have been exchanged.

Taking into consideration the age of this beautiful tree it is in a wonderful state of preservation. After more than two hundred years of existence it has the appearance of being as sound as trees of one-fourth its age. The State of West Virginia had it thoroughly examined by a tree surgeon several years ago, and all branches showing decay were removed, scars left in ages past were cleaned and filled. In appearance it now looks good for several hundred years more of life. On the northern side of its trunk there is fastened a copper plate on which is this inscription: "This tree was planted by George Washington."



# *The High Lead Tree*

I am a Judas, yet as firm I stand,
As close Earth holds my roots within her hand,
As when I was her kingliest son, and stood
Shoulders and head above my brotherhood.
My brothers' trunks upon the hillside lie,
And I who live envy the ones who die,
For I am slave: steel-woven cables bind
My breathing body, torn, dismembered, blind,
To the betrayal of my forest-kind.

For such as I there is no day, no dark,
No circling seasons wind within my bark
Their secret record, like a silken thread.
My live heart pulses in a body dead.
Not log I am, not bough, no longer tree.
I am a thing that men have made of me.
They shout below, my heavy fetters thrum,
The singing cable winds around the drum,
The donkeys shriek, the timber-fallers cry
Warning; the forests take the ax and die,
While I stand high in nakedness and swing,
Above the carnage and the clamoring,
My brothers' flesh down to the marketing.

—Frances Holmstrom

# Living Snow Fences

## New Tree Planting Possibilities Demonstrated by Railroad

By Clayton W. Watkins

THE early history of tree planting in some of the Middle Western States furnishes interesting information along the lines on which foresters are now working. It will be found that railroad companies were among the first to start this form of development. In Nebraska during the pioneer days railroads planted thousands of trees around station grounds and along their rights-of-way primarily to develop their own property, but also to demonstrate to settlers that trees could be grown.

**The crew at work making the snow fence planting at East Switch, Wallace, Nebraska, in April, 1928. This planting was designed to demonstrate the broad service of trees**

**Fifteen and a half months after the trees—caranga, Russian olive and Chinese elm—were planted by the C., B. & Q. This shelter belt will supplant the unsightly old wooden fence**

The success of these early plantings was limited because there was little information then on hardiness of varieties or on cultural methods. However, this early work has had a direct effect on rural development by the use of trees. This is brought to attention now with the advent of a definite 'arm forestry program throughout the agricultural West. This limited success with trees, especially on the semi-arid plains, has not discouraged railroad officials because they realize that trees are an asset to their property and railroads are loyal supporters of the farm forestry program now being conducted by the United States Department of Agriculture.

**A planting of Russian mulberry and caranga fifteen months after setting out. Fine, vigorous, healthy young trees, making rapid growth**

Early in 1928 the Chicago, Burlington and Quincy Railroad, cooperating with the Extension Service of the College of Agriculture and farmers owning land adjacent to the right-of-way, started a tree-planting project in western Nebraska. The purpose of this project was fourfold; to serve as a railroad snow fence, beautify the right of way by eventually replacing the unsightly wooden snow fence, act as a field shelter belt, and demonstrate tree-planting possibilities. Definite plans were made for soil preparation, planting, and care after planting, with each cooperating agency taking a share of the responsibility. During April, 1928, there were 7,000 forest-tree seedlings planted under this project and in 1929, 40,000 trees were used for additional demonstrations.

The planting stock consisted of one-year-old American elm, Chinese elm, honey locust, box elder, caranga, Russian olive, green ash, Russian mulberry, two-year-old red cedar transplants, and three-year-old Scotch and jack pine transplants. Plantings were made as two and three row shelter belts, with one or two rows of tall-growing varieties planted six feet apart, and one row of hedge on the outside. The areas planted were fenced from livestock and regularly cultivated. The plantings have been considered successful, although there were heavy losses in the 1928 evergreen stock due to unusually dry weather; and some losses from rodents and insects in the broadleaf stock. This project will be extended in 1930, and reasonable success with this experiment should interest the highway departments in the possibility of establishing permanent, living snow fences along state and federal highways from which thousands of people get their impressions of the state through which they are traveling. (Photographs by courtesy of the Agricultural Department, Chicago, Burlington and Quincy Railroad.)

# A Lumberman Peoples His Land

## With a View of Growing More Timber and Less Wood

By Erle Kauffman

"THE thing we are trying to do is to leave our land peopled," said my host with modest enthusiasm. "It was my father's dream when he settled here a half century ago."

It was early autumn and the New England landscape was a delicate symphony of color. "An admirable dream," I permitted myself to say while deeply engrossed in the rainbow hues of the hardwoods.

"And a very practical one," my host replied, a bit rebellious, I thought, at my abstraction. "We have been cutting pine timber from this tract for our lumber yards and box factory for more than fifty years."

I apologized, confessing an insatiable hunger for the art in nature. "The forestry movement was in swaddling clothes then," I remarked, "and the hills of Connecticut were covered with great trees. Your father must have possessed remarkable foresightedness."

My host only smiled. "I think it more likely that he was a good lumberman. He managed his woodland with a view of growing more timber and less wood. You see, there is a difference—to the lumberman, at least."

My host was H. Stephen Bridge, of Hazardville, Connecticut, and president of the Amos D. Bridge's Sons, Incorporated, operators of two lumber yards, a sawmill and a box factory through two generations.

"I was nine years old," continued Mr. Bridge, "when my father, Amos D. Bridge, purchased part of this tract. That was in 1872. Seven years later he purchased the entire forty acres. That was his beginning here. Now his sons—there are four of us left—and a cousin, control about 3,500 acres of timber and cut-over land. There are also eight of the third generation in our organization.

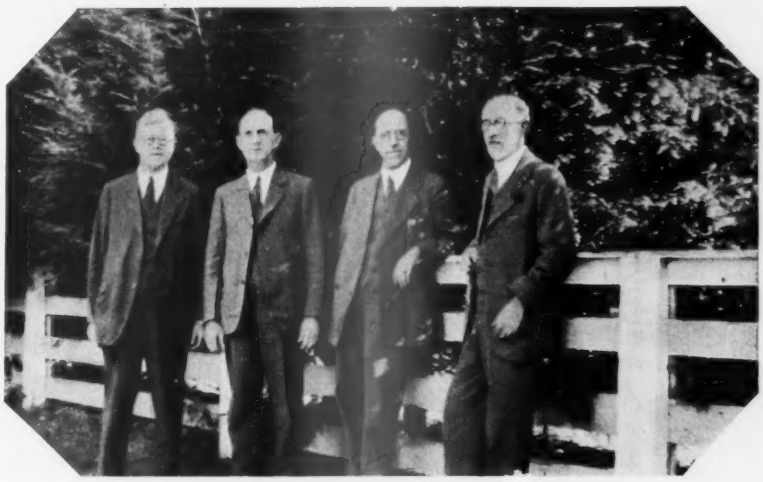
**When nature plants—Section of a forty-acre woodlot which has been supplying timber for more than fifty years**

"With the purchase of that first forty acres, my father put to work his own ideas of forestry. He immediately cut all of the virgin pine timber, leaving the hardwoods and a healthy stand of young white

pines. Of course, there was an occasional seed tree. A few years later he cut out the hardwoods, leaving more space for the pine. We have been cutting timber from the stand for the past twenty-five years, and expect to continue to cut through another generation, at least.

"On this particular spot the returns have been good. There was another tract of about three hundred acres, however, which was planted artificially. That required a great deal of work and care. We sowed white pine seed as you would a field to rye. For fifteen years it has been necessary to go in every fall and thin the overcrowded areas. We used the thinnings for fuel wood."

"But this should produce good returns later on," I reminded.



**They people their land with trees. The second generation of Bridges at Hazardville, Connecticut. *Left to right*: David A., Charles A., Homer E., and H. Stephen Bridge**

He smiled. "Undoubtedly it will. I am inclined to believe, however, that it was the urge to have his lands peopled that caused my father to reforest this area."

"Do you depend entirely upon your own woodlands for timber for your lumber yards, your mills and box factory?" I asked.

Mr. Bridge became meditative. "That brings up a question which, to my mind, all of New England should answer as we have if the practice of forestry is to develop and become really effective. We cut when it is necessary and when we want certain species we cannot obtain elsewhere. Our box shop depends, however, upon the supply of standing timber within trucking distance, and the shop in turn furnishes packages for mills within trucking distance. New England needs just this sort of plan. We should grow in Connecticut ten times as much timber as we are doing, giving employment to the people and manufacturing and furnishing these materials to our industries instead of buying from outside the state. In this manner farmers and landowners would grow trees as a crop while those employed or otherwise interested in the shops or other wood-using industries would find a greater appreciation of what you foresters have to say about forest protection and reforestation. Do you see what I mean? People are not wilfully destructive or careless when concerned with things that directly benefit them. Too, the surest sign of happiness, health and prosperity is a community or state developing in line with its own resources."

I basked for the moment in the heat of his enthusiasm, wondering at the simplicity of his plan. If all lumbermen had started cutting fifty years ago with the same joy in trees, the same idealism that must have marked the operations of Amos D. Bridge, and which is evidenced in his sons and grandsons, I reasoned, the once great forests of New England would still be peopled much the same as the Hazardville tracts. Everyone would have a definite purpose in growing and protecting trees and forests that would bring out the same instincts that characterize the Bridges—instincts that spell builders rather than destroyers.

**Dependent upon the supply of standing timber within trucking distance, the box shop in turn furnishes packages for the community mills. New England needs this plan to bring back her forests, says Mr. Bridge**

"We appreciate the value of technical leadership—the sort of encouragement unavailable

during my father's time—and work hand in hand with state and county forestry officers and organizations. One of the members of our firm is a fire warden, and fire fighting is the first order of duty in our organization. As a consequence we have suffered but one serious fire throughout a long period of years. In 1926 we lost some fine young pines, but the burn has been replanted, partly by nature, and in a few years the scar will be healed completely."

"You are planting pine and your land is naturally coming back to oak," I observed. "What is your most valuable tree?"

A slight shadow passed over his features. "Formerly quite a large portion of our land was covered with chestnut, and when the blight came it cut serious inroads into our forestry methods. For a number of years we had to cut, regardless of size, so as to save as much timber as possible. The land is now coming back to oak and white pine—both valuable trees, especially the white pine—but the chestnut tie and pole business was the most profitable we ever derived from our woodland. Another generation will undoubtedly find as profitable a tree in the white pine."

I stood for a moment marveling at the manner in which a tract of Connecticut woodland was being made to serve succeeding generations through the application of the simple methods of forestry. First there was Amos D. Bridge, who wanted his lands peopled with trees and who set out to do it with common-sense applications. There was the second generation, four of whom are now living and broadening their forest activities as well as encouraging their neighbors to the practice of forestry. They are H. Stephen Bridge, president of the company; David A. Bridge, vice-president; Homer E. Bridge, secretary, and Charles A. Bridge, treasurer. Eight of the third generation of Bridges are equipping themselves to carry on, and two of whom are already directors of the company, Amos D. Bridge, 2nd, and Robert P. Bridge.

"Forestry is an educational influence as well as a sound business policy," continued Mr. Bridge, "and we have made it interesting for our children since they were old enough to understand. Today that interest has reached a point where they own woodland of their own. They in turn realize the educational necessity in forestry, especially in dealing with farm woodlots, and it is quite probable that generations of Bridges to come will know and appreciate the value of trees as this and the preceding generation have."

"That is the key to forest conservation," I told him in admiration. "You apparently have found it without much difficulty."

"There is nothing difficult about the truth," he said quickly. "Our children know that a large part of the farms of New England contain considerable waste and woodland, and that the farmers are inclined to cut these lands clean for wood. They know this to be a great mistake, that the waste trees should be cut for wood, leaving the soil with enough standing trees of good variety so that they can produce timber, not wood. They know that trees six to twelve inches in diameter produce timber much faster than the small ones. They know that fire must be prevented, that disease and insects must be controlled. And most of all they know there is profit in a healthy and well managed forest."

"A great many adults cannot conceive those truths," I admitted.

A patient smile was given me. "Perhaps no one has ever told them the benefits of having their land peopled with trees."

## Plan to Attend the Association's Annual Meeting

**With plans moving ahead for the 1930 Annual Meeting of The American Forestry Association at Minneapolis, Minnesota, April 29 and 30 and May 1, members and others are urged to communicate with the Association for information concerning special railroad rates. It matters not where you live—a hundred or a thousand miles from Minneapolis—a substantial reduction will be available if a sufficient number advise the Association of their expected attendance.**

**Every one whose interest in forest and wild life conservation demands a broader program and more definite action on the part of the nation, states, communities and individuals should support this meeting, the greatest since the establishment of the Association a half-century ago. Your support in this instance should be in your attendance. Make your plans now!**

**The meeting will be held at the Hotel Radisson in Minneapolis. It will feature forestry and related fields. Its purpose is to create a real stimulus to the progress of forestry throughout the nation, and particularly in the Lake States.**

# Snow

(*Continued from page* 91)

shoes. Soon a fire was going, which, during the course of the night, sank deeper and deeper in the snow. We pitched our tent nearby.

It was intensely cold—nearly forty below zero—yet we spent a fairly comfortable night, one of us rising every hour our snowshoes. Soon a fire was going, which, during the to build up the fire. When daylight came we were on the set to retracing our steps back to the divide with vim.

Again on the divide we continued eastward. On both sides the terrain fell off gradually, with occasional meadows and open glades in the timber. To our left was the Lolo Creek drainage, to our right the immense wilderness of the Clearwater country, at that time hardly more than half explored. As we continued to climb our snowshoes sank two feet in the powdery snow. By afternoon we dragged heavily.

Woodward had a reputation as a cross-country runner at Cornell and in those days I had a pretty stringy pair of legs myself, but this continual grind was sufficient to exhaust the most hardened athlete. We camped on the ridge before darkness.

I made hard work of getting two dead trees down. In the meantime Woodward had burrowed into the snow and had the fire going and the tent pitched. A little after dark we settled down to a well-earned meal of thick, hot erbswurst soup, bacon, hardtack, and boiled rice with raisins. With our pipes going after supper we began to wonder for the first time whether we were not getting into a jack pot that we might have trouble getting out of. We had only one day's food supply left and we were only half way to Elk Meadow. It was not too late to turn back, but we decided we would push ahead. That night the cold moderated to zero, and at midnight it began to snow.

In the morning we dug out and swung on our packs for another day. The snow continued to fall. The divide gradually made its way up toward Skookum Butte, with an elevation of 7,000 feet. The depth of the snow was incredible. It must have been more than fifteen feet, perhaps twenty-five feet in places, and in the short alpine growth of spruce and fir we literally walked on the tree tops.

There were no small birds or squirrels. Once we heard the dismal croak of the great northern raven, and a single Canada jay had flitted around our last camp. Once when we threw ourselves on the snow to rest for a moment a mouse fearfully ventured out from a sheltering tree top on the surface of the snow. When he was two feet from his shelter there was a flash of blue, the stabbing of a sharp beak, and a big Stellers jay bore his prey away. We saw one or two marten tracks, but no signs of coyote, lynx or lion. The four-footed creatures had all left this inhospitable country.

We made only four miles that day, with the most strenuous of efforts, and camped at the edge of a small lake, its water hidden deep under the all-enveloping snow. We knew it was a lake and not a meadow only by our pocket map. We were beginning to feel the effects of the hard travel and broken sleep. We had barely enough food for supper and breakfast. In the morning we took stock of our scanty supply—a small lump of raisins, perhaps two ounces, a cup of sugar in a cloth sack, and a little package of tea. We had to make the climb over Skookum Butte, then one more summit and we would be on the down trail to the South Fork.

The long pull to the top of Skookum Butte was a nightmare. The summit rose above timber line, and the fresh snow was so deep we fairly wallowed through it. Our snowshoes seemed to have no supporting power at all, and the load of dry, sugary snow on top of them made each step an extreme effort. Fifty feet was as much as we could make without resting. Too, a keen east wind swirled the snow in a blinding fury around us. It was well past noon when we finally made the summit.

Between gusts of snow we caught a glimpse of the timbered saddle ahead and started downhill. The ridge seemed to rise to our left and we kept bearing to the left to stay on the crest. We continued in this way for half an hour, making fairly good time, when to our utter discouragement we ran into a fresh snowshoe track. It was obvious what we had done. By continually bearing to the left we had made a half circle around the mountain and were back in our own track. It was bad woodsmanship, but perhaps excusable in view of our exhausted condition and the blinding snowstorm. It was three o'clock before we again made the summit.

Making camp was a terrible experience. The only dry wood available was a short, conical, dead spruce, eighteen inches in diameter at the top of the snow. My ax blows seemed to have no force, and after every few strokes I would sink to the snow violently ill from the exertion and an empty stomach. It was well after dark before we had camp made and a moderate supply of wood in the pile.

At daylight we were on the trail again, but without much punch for the hill ahead of us. It seemed an eternity of effort. I felt as though I had been at it all my life and had nothing else ahead in the future but the drag of one foot after the other.

All things have an end, and eventually we dragged ourselves weakly over the summit. The trail blazes were buried many feet deep in the snow, but our map location seemed sufficiently accurate to insure our taking the correct ridge. While the going was still heavy it was a tremendous relief to get a down grade in our favor and to know that we were definitely on the way out of the smothering snow. Three miles down the ridge we made our last camp. For supper we had only hot melted snow water sweetened with the last of our sugar, but it gave us temporary stimulation.

The next day we slowly made our way down the ridge and shortly after noon connected with Thayer, who was waiting for us with his team and sleigh according to appointment. He bore the astonishing news of the culmination of the Ballinger-Pinchot controversy and the fact that we had a new chief in the Forest Service.

# *Foresters Hold Annual Conclave*

## Discuss Forest Policy; Pinchot and Ahern Assail Society's Proposed Policy as Evading Main Issue of Forest Devastation

DISCUSSION of the much-discussed question of a forest policy for the United States occupied the center of the stage at the annual meeting of the Society of American Foresters held at Des Moines, Iowa, December 30 and 31. The entire first day of the meeting was devoted to consideration of forest policy questions and particularly to the draft of a national forest policy which a special committee, pursuant to instructions given at the 1929 annual meeting, presented to the convention through the committee chairman, Mr. Barrington Moore.

The recommendations of the forest policy committee, while concurred in by a majority of the members of the committee, were not subscribed to in their entirety by all the committee. Mr. Gifford Pinchot and Maj. George P. Ahern submitted a minority report in which they assailed the majority report on the grounds that it "omits from present consideration the most necessary, most effective, and most immediate step required in the public interest when it fails adequately to discuss, and relegates to consideration in the indefinite future, the public control of forest devastation." Their report protests against further delays in stopping forest devastation by creation of a central forestry board or a temporary forest commission as recommended by the majority report and concludes by recommending the prompt passage of a law by Congress to prevent commercial timberland owners from injuring the public interest by destructive lumbering and to require the timberland owners to keep their timberland growing wood. "This," they declared, "can be done under the Constitution. The Capper Bill shows how."

Supplementary statements, commenting on certain sections of the majority report, were likewise presented by two other members of the policy committee—Mr. Franklin W. Reed, of the National Lumber Manufacturers Association, and Mr. Ward Shepard, of the United States Forest Service. Mr. Reed asserted that the majority report overemphasizes the importance of forest conservation to insure a timber supply in comparison with other forest needs, and pays too little attention to a consideration of probable changes in the future need of lumber by the nation. He asserted that the Society can make a more intelligent and reliable forecast of future timber requirements than has ever been made before, and that such a forecast is indispensable in drafting a national forest policy. Mr. Shepard proposed that the Society's policy should more vigorously attack the question of forest destruction and he proposed cooperative regulation of private forests in which the timber owner, the state, the federal government, and the public participates.

The majority report of the committee recommends a national forest policy calling for: (1) Expansion of federal activities in the acquisition of forest land. (2) Development of a plan to stabilize the lumber industry, particularly on the Pacific Coast. (3) Acceleration of the cooperative and research activities authorized by the Clarke-McNary and the McNary-McSweeney Acts. (4) Strengthening the administration and protection of the National Forests. (5) Retention of the Forest Service in the Department of Agriculture. (6) A study of future timber supplies and land utilization. (7) Establishment of a permanent central forestry board with adequate federal appropriations to coordinate the forestry efforts of the federal government, the states, and private owners. (8) Assumption of greater responsibility by the states in the management of forest lands not included under the federal acquisition plan. (9) Fulfillment by private owners of their responsibilities in protecting their lands and in harvesting their timber without destroying the growing capacity of the forest (10) A study of public forest regulation as developed by other countries of the world with a view to adopting a form of regulation applicable to conditions in the United States. (11) Introduction of better methods of utilizing timber. (12) More adequate support of public education in forestry.

The majority report also recommends that the President of the United States appoint a temporary forest commission to study the above proposals and any others that may be submitted to it.

The committee's policy plank for an enlarged program of forest acquisition by the federal government contemplates adding five million acres of the Public Domain to the National Forests and the acquisition by purchase or exchange of twelve million acres of private lands within the National Forests. It would also have the federal government acquire primarily for watershed protection six million acres in the Appalachian Mountains, New England, and the Ozarks; six million acres in the Mississippi drainage, and approximately four million acres in the Lake States and the Southern pine region.

Papers bearing upon various phases of a national forest policy were also presented by Page S. Bunker, State Forester of Alabama; S. T. Dana, Dean, School of Forestry, University of Michigan; Dr. Wilson Compton, Manager, National Lumber Manufacturers Association; Earle H. Clapp, Assistant Forester, United States Forest Service; Henry S. Graves, Dean, Yale Forest School; L. F. Kneipp, United States Forest Service; William B. Greeley, Manager, West Coast Lumbermen's Association; and Adrian F. Busick, formerly Assistant Chief Counsel, Federal Trade Commission. As a conclusion of the day's discussion, the convention voted to refer the majority and minority reports on national forest policy to the regional sections of the Society for further consideration and comment.

The minority report of Mr. Pinchot and Maj. Ahern was a vigorous attack upon forest devastation by private timberland owners. The authors declared that the forests of America are in greater danger now than ever before in our history. "Forest devastation on privately owned timberlands is among the most serious of all dangers to our future prosperity," they asserted. "We cannot go on without wood. Forest devastation wastes not only wood but water, too. It ravages our watersheds, and in the Northwest squanders the great original forest trees that can never be replaced. Forest growth is falling steadily further behind in the race with forest destruction. Ten years ago destruction was four times greater than new growth. Today it is at least six times greater."

Of all lumber sawed in the United States, the authors declared, 96 per cent is cut without intent to insure another forest crop. Lumbermen interested in continuing profits from forest devastation, they charge, have spent great sums in propaganda intended to make the people believe that the future of America's forests is safe.

The second day of the Society's meeting was devoted to technical and scientific papers presented by Dr. George J. Ritter, of the Forest Products Laboratory; Aldo Leopold, of the Sporting Arms and Ammunition Institute; W. C. Lowdermilk, of the California Forest Experiment Station; Willis M. Baker, Assistant State Forester of New Jersey; and Honorable L. J. Dickinson, of the House of Representatives. After conclusion of the meeting, announcement was made of the results of the annual election of officers as follows: President, Paul G. Redington; Vice-President, John D. Guthrie; Council Members, Stuart B. Show, Ralph S. Hosmer, Clifton D. Howe, and Claude R. Tillotson. The Secretary-Treasurer has not yet been appointed.

# *First Aids in Tree Surgery*

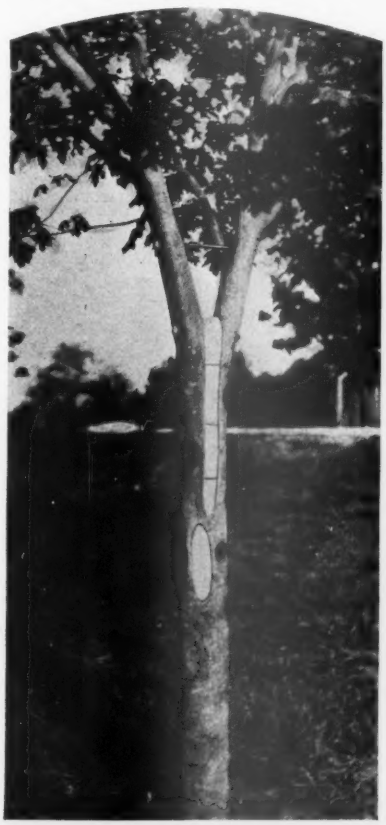
By G. H. COLLINGWOOD

JUST where tree pruning becomes tree surgery is difficult to distinguish for the two activities are frequently carried on at the same time by the same men. Certain it is, that tree pruning is often a first-aid treatment, and properly pruned trees may often be spared the more costly work that is usually classed as tree surgery. This is especially true if injuries are attended to at once. Wounds made with a pruning saw should be disinfected and covered after the manner discussed in the preceding article. The object is to prevent decay from entering the wood. As decay progresses into the tree structure it may lead to disfigurement and premature death. Similar efforts to keep out decay should be made wherever a limb breaks or the bark is stripped from the trunk. These are impractical in the forest, but they are worth while for shade trees and lawn specimens. When people realize how little it costs to properly treat injuries at the time they are made as compared with the expense after decay has set in, they will have made a big step toward the preservation of their trees. This brings up the essential question as to what trees are of sufficient value to warrant the expense of repairing them. One might go a step farther and consider those trees that nature has endowed with capacities of resistance and recuperation sufficient to warrant an expensive repair job.

> "*FIRST AIDS IN TREE SURGERY*" takes one into the highly specialized field of the tree surgeon, the scope and demand for whose work is resulting in a new profession, closely allied to that of forestry. Such an article as this has a definite place in the series, of which there will follow:
>
> *Shade Trees, Their Kinds and Care*
> *Trees for the Roadside*
> *The Making of a Town Forest*
> *Memorial Trees and Groves*
>
> Only a portion of the field of tree surgery can be covered in an article of this length, which is designed to aid and encourage tree owners to keep their trees healthy and vigorous rather than to supply information for the technician.—*Editor.*

Questions of value must be answered by the owner, for these are frequently a matter of opinion. No one will dispute that trees may have a value for the manner in which they grace the property on which they stand. Other trees have a sentimental value, while closely associated with this is the historical value of an increasing number of trees. Upon these values, taken singly or as a whole, depends to a considerable extent the amount which one is justified in spending for tree surgery.

But some trees may have a high aesthetic value, or be truly historical and yet not justify heavy expenditures. These are the trees which have small probability of reaching a great age, or for which especially aggressive enemies have developed. Among the trees with an enemy which prevents recovery is our American chestnut whose



**BEFORE AND AFTER**

***Left*—A young Norway maple showing an unusual amount of filling and iron work**

***Right*—The same tree four years later, showing the wound covered by vigorous growth**

**THE TELL-TALE EVIDENCE**
**A bit of fungus growth and a little dead-wood indicate inner decay**

tems through which it could be grown. Then out of Asia came the chestnut blight. Starting on the eastern seaboard it was scoffed at by many. Owners of lawn and shade trees spent large sums in futile efforts to save their trees. At last the truth was borne in upon them. There was nothing they could do. The tree is doomed. For that reason any efforts to practice tree surgery upon a chestnut will be money thrown away. Government plant explorers are now searching Asia and Europe for blight resistant chestnuts that may be adapted to our conditions.

Less aggressive are the boring insects that attack our black locust and white birches. Yet there is small reason to hope for the recovery of an injured tree of these species, or of any of the cultivated cherries.

Failure to produce vigorous growth capable of covering a wound, or comparatively short life and weak structure compels one to discourage spending more than the cost of careful pruning upon maple, Lombardy poplars, basswood, mountain ash, red bud, Japanese varnish tree, china berry, crape myrtle, paper mulberry, yellow woods, or most of the deciduous magnolias. While minor defects involving only small sums may be cared for, more costly work should give way to consideration of a new tree to replace the old one.

nuts have given joy to so many generations of young people. Foresters of the nineteenth century looked upon chestnut as peculiarly rugged and resistant. They laid plans for special silvicultural systems through which it could be grown. Then out of Asia came the chestnut blight. Starting on the eastern seaboard it was scoffed at by many. Owners of lawn and shade trees spent large sums in futile efforts to save their trees. At last the truth was borne in upon them. There was nothing they could do. The tree is doomed. For that reason any efforts to practice tree surgery upon a chestnut will be money thrown away. Government plant explorers are now searching Asia and Europe for blight resistant chestnuts that may be adapted to our conditions.

**OPENING THE CAVITY**

**The diseased area may be much larger than the opening indicates**

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Failure to produce vigorous growth capable of covering a wound, or comparatively short life and weak structure compels one to discourage spending more than the cost of careful pruning upon maple, Lombardy poplars, basswood, mountain ash, red bud, Japanese varnish tree, china berry, crape myrtle, paper mulberry, yellow woods, or most of the deciduous magnolias. While minor defects involving only small sums may be cared for, more costly work should give way to consideration of a new tree to replace the old one. To move a large tree and establish it is relatively costly, yet it is often no more expensive than the work of cleaning and filling. In the case of trees such as have been listed the new tree is far more satisfactory, and has possibilities of a long and useful life.

But to return to the problems of tree surgery. One should remember that the growing tissues of a tree are in the cambium layer which lies between the inner bark and the outer sapwood. The heart wood plays a small part in the life of a tree, but is highly important as a support for the trunk and crown. The bark is the protecting coat, and to a remarkable extent is impervious to the attacks of tree enemies. Accordingly, breaks in the surface of the bark frequently provide a means for their entrance. It follows that the first aid in tree surgery is to sterilize and cover every tree wound as soon as possible after it is discovered. Methods similar to those described in the article on pruning are highly satisfactory. A coat of shellac followed by some more permanent covering is recommended.

Trees are at a disadvantage in regard to any efforts that man may make to help them. They make no outcry when they are hurt, and only a few unusual examples even twinge or "bleed." Either of these reactions are temporary and may be unseen. Accordingly, a wound may go for years without being noticed. Many wounds are healed over without the entrance of wood-destroying fungi or insects, which gives

**THE COMPLETED JOB**

**The cavity has been filled, but the opening should have followed a long curve**

rise to an opinion that tree wounds need no care. Resinous trees like the pines are particularly able to resist decay because of the pitch which exudes from the pores and covers many wounds. That explains why ordinarily comparatively little work is done upon the pines, but the most casual observation will show that they are by no means immune.

**A DIFFICULT PATIENT**
**No amount of cleaning or filling can save this tree**

Decay is almost invariably the result of a fungus growth, and sooner or later it is made evident by the fruiting bodies. We speak of them as toadstools or punks and pass along without a thought. But they are signposts calling attention to inner weakness in the tree trunk. If the decay is heeded in time the tree may be saved with a minimum of expense, but if it is neglected too long cost of control becomes greater and the chances for recovery become less. Therefore, the next move in tree care is to dig out these fungus growths and disinfect the surrounding wood as early as possible.

Not only is it necessary to remove the fruiting bodies, but it is equally important to remove all the decayed and discolored wood from behind the fruiting bodies. After that the remaining wood may be disinfected with a bichloride of mercury solution and the wound covered with a coat of paint, asphalt or tar. As yet no wound dressing has been devised capable of withstanding sap pressure and the constant action of the elements.

When control is started early enough in the progress of the decay the surface need not be filled. The chief function of the filling is to provide a smooth surface over which the tissues may grow. Taken by itself, no filling material can be said to add strength to the tree. Furthermore, if put on in a thin layer without sufficient anchorage it may prove a menace rather than a help, for moisture that seeps behind the filling creates an excellent condition for the growth of wood-destroying fungi. Rather than a poor filling, it is far better to paint the exposed surface of these shallow wounds, or coat with tar. Always, however, the careful tree surgeon will provide a means whereby the growing tissues may proceed across the exposed surface without curling inwards.

Larger cavities, which result from years of neglect, require careful filling and frequently they should be braced with iron bolts. This is where the cleverness of the tree surgeon is most evident, for the work demands laborious planning and adjustment. It is not a contradiction to add that most of this work must be as carefully hidden when the job is complete. Back of the smooth surface of a well executed filling may be hours of painstaking labor spent digging out infected wood, disinfecting the remaining wood, and setting in ingenious schemes of bolts and braces. All this is embedded and surrounded by the filling, which must have a smooth surface and should, so far as possible, simulate the original contours of the tree trunk. There are two major reasons for all this care—one to assure the destruction of the decay and the other to provide a base over which the tree may heal itself.

**UNSATISFACTORY OPENINGS**
**One long tapering opening would have a better chance of healing**

This article can scarcely discuss the relative merits of the various tree cavity fillers and the ways of preparing them. To do so would take more space than is available and would lead into the realm of patents and secret formulas. Several fillers are being used, including sectional cement, wood, cork, asphalt and compositions. Progressive tree surgeons are cooperating with federal and state agencies to discover more satisfactory materials, or methods of applying them. They are particularly desirous of developing a more satisfactory wound dressing. There are various other mixtures as well as ways of applying them. Suffice it to say that the purpose of the filling is not to strengthen the trunk, but to stop decay and provide a smooth base over which the new wood may proceed without

curving or rolling into the cavity. Strength is added to the tree by means of braces, bolts, chains, and cables. In fact, large cavities need something in the nature of bolts or heavy staples to hold the filling in place. All of these must be applied with care and intelligence that they may be helpful rather than harmful. For example, to place any of these around the tree may have the effect of girdling. If it does not eventually kill the tree it will seriously disfigure it.

In so far as possible the greatest length of the cavity opening should be vertical rather than horizontal. A long cavity extending around the tree will stop the progress of the sap above and below the opening. At best it will weaken the tree and it may result in slow death. On the other hand, the cavity may extend a long distance up the tree trunk without material harm. In the same way the opening should follow the course of the grain as far as possible and should be tapering at either end. By this means the remaining wood will follow the natural course of the sap. It will prevent the formation of V-shaped islands of dead wood at either end of the opening.

Behind the opening the cavity may widen considerably, but the margin should be kept thick as possible. A cavity which widens behind the opening gives anchorage which will prevent the filling from loosening and falling out. The edges of the filling should be made tight as possible with some fairly elastic material. This will help take up the difference in the expansion and contraction of the wood and the filling, as caused by temperature changes. Before the job is completed the surface of the filling should be waterproofed. Tar, asphalt or a good elastic cement is satisfactory for this, but none of these should be applied so as to injure the cambium layer surrounding the opening.

Tree surgeons, like all technical workers, are rapidly becoming professionalized. All forward-looking members of the profession are constantly striving to maintain high standards of ethics within the ranks. This is especially true of the large, responsible firms of tree surgeons. Occasionally, however, there appear unscrupulous persons who pose as tree surgeons. They are charlatans and should be discouraged from every angle. If this article does no more than make it more difficult for them to operate it will be worth while.

**A FINE EXAMPLE**

**This sturdy oak justifies the effort and expense necessary to put it in good shape**

Things helpful for trees are so easily confused with those that are useless or harmful that the average individual has difficulty distinguishing one from the other. So-called tree experts have driven nails into trees to give them more iron, or bored holes into the trunk to be filled with materials to stimulate the tree or free it from pests. To brand these as fakes may be to shut one's mind to progress. Certainly something may be said in favor of the reasoning behind the effort, but too often the treatment is fatal to the patient. Investigations now being carried on demonstrate that some trees may be helped by the application of iron in more or less soluble form. Trees whose foliage is yellow have been made green by these means, but to attempt to correct this condition by driving nails into the tree is to inflict injuries which may lead to worse difficulties. At least one research group is attempting to control the bronze birch borer by injecting solutions of strychnine into the tree. They have proved by means of soluble dyes that the solution is carried up the tree trunk, but they have not been able to affect the activities of the borers. The fact that reputable organizations are studying these methods of solving tree problems makes it unwise to brand them all as frauds. Instead, it is an added argument in favor of investigating the integrity and training of tree surgeons before entering into a contract with them.

One may go farther and comment upon the application of white-wash to tree trunks, and heavily scraping the bark. Ordinarily, neither has any effect other than to disfigure the natural beauty of the tree trunk. White-wash helps control sunscald and excessive cracking on young tender-barked trees that have been suddenly exposed to direct sunlight by transplanting, or by clearing undergrowth from around them. It has no effect upon older trees with thick bark. On the other hand, to scrape the bark and reduce its thickness can be of no benefit to the tree, and may prove harmful. The purpose of the bark is to protect the tender growing tissues.

Available books on the subject of tree surgery are comparatively rare. "Practical Tree Repair," by E. Peets, is a book of long standing. A chapter is found in J. M. Bennett's "Roadside Development," while the United States Department of Agriculture covers the subject in Farmers Bulletin No. 1178, "Tree Surgery," by J. Franklin Collins.

# Department of Science Education

*Conducted by* ELLIS C. PERSING

*Natural Science Department, School of Education, Western Reserve University*

***How Teachers May Use Current Articles in This Magazine to Supplement Nature and Science-Study Textbooks Will Be Outlined in This Column Each Month by Professor Persing***

THE suggestions for using the articles in this magazine will be given in a form that can be used directly by students and teachers in the upper elementary grades, the Junior High School and Senior High School. It is not our plan to displace textbooks in any field of subject matter but merely to suggest supplementary reading and visual materials which will enrich the present course and relate it to the experiences of the pupils.

## Elementary School

*Wild Life*—"New Frontiers for the African Lion" by Ignatius Phayre (see page 75).

Perhaps you like to read stories about lions. Have you ever heard how lions could stop work on a railroad? Do you know where lions live today? What do lions eat? Many of your questions about lions will be answered by this article.

*Animals*—"How Fast Can Animals Think?" by John A. Hope (see page 86).

How many of these questions can you answer about the wolf and the fox?

1. What does a wolf do when pursued by hounds?
2. What will the fox do when the hounds are on his trail?
3. Tell other ways in which the wolf and the fox differ.

Read the article and be prepared to tell the class about it.

"Washington's Elm," by J. C. Scott (page 97, this issue).

Would you like to see the oak tree planted by George Washington more than two hundred years ago? Here is a picture of the tree at Berkeley Springs, West Virginia.

*Trees*—"The Hall of Fame for Trees" (see page 85 this issue).

How old is the Dilworthtown Oak in Pennsylvania? Why should it be in the Hall of Fame for Trees?

Why has the Lincoln Memorial Tree of Kansas been nominated for the Hall of Fame?

## Junior High School

*Trees*—"Living Snow Fences" by Clayton W. Watkins (see page 99, this issue).

Perhaps you have heard of planting trees for fences? But here is a new kind of fence.

1. Why did the railroad plant trees during the pioneer days in Nebraska?
2. What was the purpose of the tree planting project by Chicago, Burlington and Quincy Railroad in 1928?
3. What kind of trees were planted?

*Insects*—"An Adventure in Bug Hunting" by David Arrivee (see page 71, this issue).

Can you think of a way to kill insects by the thousands in a forest? This article tells how the foresters have done it.

1. How do the bark beetles damage trees?
2. How was a method for controlling them discovered?

## Senior High School

*Camping and Hiking*—"Down Hiawatha's River" by Ben East (see page 67 this issue).

Do you remember the song of Hiawatha? You will be interested in the expedition that visited the falls of Hiawatha's River.

*Conservation*—"The Public Lands from a Cowman's Viewpoint" by Dan D. Casement (see page 83, this issue).

Are you interested in the arguments for and against President Hoover's proposal to turn over to the western states 190,000,000 acres of unappropriated public lands? Here is an article that is in favor of the plan. Articles dealing with both sides of this question are being published in AMERICAN FORESTS AND FOREST LIFE.

"A Lumberman Peoples His Land" by Erle Kauffman (see page 100, this issue).

This article should be read in connection with the study of lumbering. It gives the point of view of forestry, and its relation to industry.

1. What was the forest policy of Mr. Bridge's father?
2. Why did the sons cut timber from the large tracts for twenty-five years?
3. How does Mr. Bridge use the New England forests?
4. How does he prevent forest fires?
5. What is the key to forest conservation?

*Trees*—"X-Raying Trees" by T. B. Maloy and R. B. Wilsey (see page 79). Perhaps you have heard of X-raying some part of our body; but have you heard of X-raying trees?

1. What led to the attempt to X-ray trees?
2. What are the possibilities for the use of the X-ray for forestry?

*Soils*—"Fires That Burn Deep" by B. F. Williamson (see page 92 this issue).

Here is an interesting experiment for you to study, when you are investigating forest life.

**Are you familiar with the trees that bloom in February? The blossoms appear while the earth is still clothed in a blanket of snow and ice! The sight of the pussy willow with its gray pussies will more than repay you for your hike to the woods.**

**In February our bird friends begin to return as far north as Ohio. Who will see the first robin or the first bluebird? Have you ever tried to keep a list of the birds you see each month? It is well worth your while.**

**Why will the ground hog likely be in the headlines of our daily newspapers on a certain day this month?**

*No Gambler*

"Noted Anthropologist Doubts Age of Bones," says a headline. What has that to do with the game? Now, if they were loaded—

*The True Sporting Spirit*

The sad-looking man at the corner table had been waiting a very long time for his order. At last a waiter approached him and said:

"Your fish will be coming any minute now, sir."

"Oh, yes," said the sad man, looking interested. "And what bait are you using?"—*Southern Lumber Journal.*

*His Share*

Cogitating over some recent rules to govern federal employees' expense accounts, Ranger Bills reports in the *California District News Letter* that:

"Guard Burnham Upp, who slept in a barn with two horses and a cow t'other night, has put in a claim under the new fiscal regulation for ¼ of the lodgin' charge."

*Forest Folks*

Once upon a time a forest guard wanted to get married right away, right during the fire season. He couldn't go out to the big city, so they had to ask the local justice of the peace to do the trick. The J. P. was much better at trying fire trespassers than he was at the marriage ceremony, but he agreed to try it—once. He looked for his book, but he couldn't find it, so he started:

"Do you want to marry this young woman?" he asked the guard.

"Sure," said the guard.

"Young woman, do you want to marry this fire chaser?"

"Yes," the lady replied.

"Then I pronounce you man and wife according to the best of my recollection of what it says on the memorandum I musta left at home in my other pants."

*When to be Nonchalant in the Forest Service*

Harold G. Peterson, Forest Ranger, Deerlodge National Forest, Butte, Montana, helps along with this: Two years ago during American Forest Week it fell to my lot to talk to the grade school children in one of the smaller towns on the Deerlodge Forest. I made an effort to show them how the forest affected their work and their play and the importance the forest had on the community in which they lived. Then I had the youngsters ask any questions pertaining to the forests. Just as I was ready to close a little girl raised her hand and said that she knew a poem about a tree, so I asked her if she would not come up in front and recite it to the rest of the boys and girls. This is what she said:

Don't be discouraged if your work is large
And your deeds are few,
For once the mighty oak
Was a nut like you.

*Fellers We Avoid*

A guy I hate,
Orlando Goopy,
Calls Whoopee "woopee"
Instead of "hoopee."

The bird I shun
Is Oswald Decies,
Calls a species "speeshy"
Instead of "speesheez"!

—*S. S.*

*Must Be Our Lightnin' Bug*

An insect, not classified in the cable message, immigrating to Turkey from Australia and America, is blamed for telephone line troubles, according to a news story. The insect dines on the insulation placed around the wires. When the covering has once been perforated rain gets in and ruins the wires.

*Sorta Like Fossils Y'Know*

"All of the animals mummified are known to be still living," declares *Science.*

The camera man went to Africa for big game photographs. One of his companions was chased by a lion. As the man sprinted he heard a shout and he looked hopefully toward the thicket whence the sound came. It was the camera man who came forth ready for pictures. "Hold on there," he shouted, "you're too far ahead of the lion, I can't get you both in!"—*Boys' Life.*

# Sustained Yield VS. Period Operation

*Railroads are permanent when new tree crops are grown, as in this Douglas Fir Region*

***The National Lumber Manufacturers Association*** *recommends adoption of the sustained yield principle wherever practicable and urges a careful study of its possibilities by all timberland owners.*

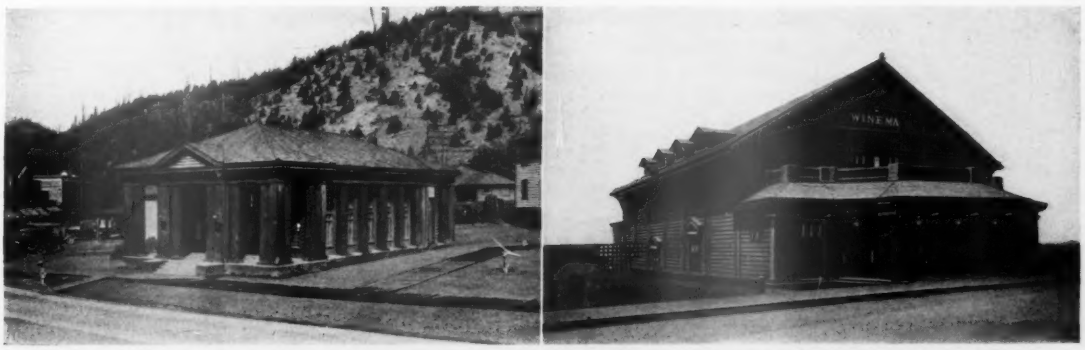
THE prevailing practice in the lumber industry has been to organize an operation on a period basis; to construct a plant of a capacity to utilize the amount of timber now standing within a specified period of years; and to finance the operation so that when the last tree is cut the total investment will be liquidated. The plant, then, and the cut-over land have only a salvage value. The land often must be abandoned.

A sustained yield plan of operation recognizes that timber grows, that with proper care in logging and protection the land will continuously produce successive new crops of timber for the mill forever. The mill is of a capacity to fit the annual production of the land. The investment, then, in plant and land becomes permanent; it does not have to be written off at the end of a specified term of years; both plant and land continue to be productive and valuable.

A number of lumber manufacturers have already adopted the sustained yield principle. Its possibilities should be given thorough consideration by every operator.

Sustained yield offers much for stabilization of the industry as a whole. It contributes also to the general welfare in that it means permanent, well-built towns, and a permanent and responsible population.

*For copy of the full forestry program recently adopted write, The National Lumber Manufacturers Association, Transportation Bldg., Washington, D. C.*



*Bank and Theatre at Scotia, California—supported by a sustained yield Redwood operation*

## Nation-Wide Forest Survey

The projected all-states forest survey, provided in the Forest Research Act of 1928, will be launched early this year, beginning in the Douglas fir region of western Washington and Oregon. The initial appropriation, $30,000, was allotted by Congress to the Pacific Northwest Experiment Station for this work.

Plans for the Northwest survey have been shaping for some months, Thornton T. Munger, director of the station, has announced and in December actual field work, as a preliminary test of methods, was begun in Washington County, Oregon. A group of skilled technical workers is being added to the staff of the Forest Experiment Station to conduct this project.

Horace J. Andrews, senior forest economist, graduate forester and experienced timber cruiser, recently resigned from the Michigan Department of Conservation to accept the leadership of the project. Other members so far selected are: R. W. Cowlin, associate forest economist; F. L. Moravets, junior forester, and Philip A. Briergleb, junior forester. Bruce Hoffman, logging engineer of the United States Forest Service, will assist in the survey during its beginning in questions of cruising, converting factors, accessibility, zones and similar matters.

Some of the questions the survey will attempt to answer are: How much timber is there? What rate of cutting can the industries of the region maintain forever? How long can the United States supply its own needs for pulp wood, furniture hardwoods, airplane spruce and similar uses?

## Kelleter Named Wisconsin Conservation Director

Paul D. Kelleter, recently appointed administrative assistant of the Federal Farm Board, has resigned to accept an appointment as director of the Wisconsin Conservation Commission. Mr. Kelleter will be the second man to fill this position since its creation in 1927. The office had been vacant since the resignation of L. B. Nagler a year ago.

Mr. Kelleter served for five years as director of forest extension at the New York State College of Forestry at Syracuse. Previous to that he was in the office of the Secretary of Agriculture.

## *Forest Service Celebrates Twenty-fifth Anniversary*

**On February 1 the Forest Service will celebrate its twenty-fifth birthday. As a feature of the celebration a meeting will be held in the auditorium of the National Museum at Washington. Among speakers of national note will be Gifford Pinchot, who was first chief forester, Colonel Henry S. Graves, his successor, Major R. Y. Stuart, present chief forester, former Secretary of Agriculture Jardine, and Assistant Secretary of Agriculture Dunlap. Many old-timers who have rounded out a quarter century of service in forestry for the government will be on hand.**

## International Paper Company Continues Newsprint Price

The International Paper Company has announced through the American Newspaper Publishers Association that the present price of $55.20 a ton for newsprint would remain unchanged for the first six months of 1930. The announcement said there would be no increase after that date unless a notice of at least thirty days was given to the newspaper publishers. At the same time the special newsprint committee of the publishers' association received a telegram from C. R. Whitehead, chairman of the board of governors of the Newsprint Institute of Canada, saying that the price of $60 a ton for newsprint recently decided on by some of the larger Canadian newsprint manufacturers would remain unless conditions of the market changed in the near future. The American association and publishers not members of the organization have been opposing the attempts of the Canadian paper manufacturers to increase the price to $60 a ton and recently held an emergency convention here to discuss the situation.

At the convention the publishers charged that the newsprint manufacturers were violating the interstate commerce and anti-trust laws in their concerted action in fixing the price of newsprint. The officials of the publishers' association were asked at the convention to look into the advisability of asking a federal investigation.

## Washington Foresters Ask Increased State Activities

Chamber of Commerce representatives from twelve different cities in the State, national and private foresters and forestry students from the University of Washington joined in the eighth annual meeting of the Washington State Forestry Conference, held recently in Seattle. The need for a comprehensive reforestation program and the best means of inaugurating it, were stressed.

Dean Hugo Winkenwerder, president of the conference, presided. The speakers included C. S. Cowan, chief firewarden, State Forest Fire Association; Frank Lamb, president of the State Chamber of Commerce; C. S. Chapman, of the Weyerhaeuser Timber Company, Takoma; Clark V. Savidge, commissioner of public lands; Captain John B. Woods, of the Long-Bell Lumber Company.

Officers of the conference were re-elected by the trustees. An additional vice-president, Walter M. Luethold, of Deer Park, was named.

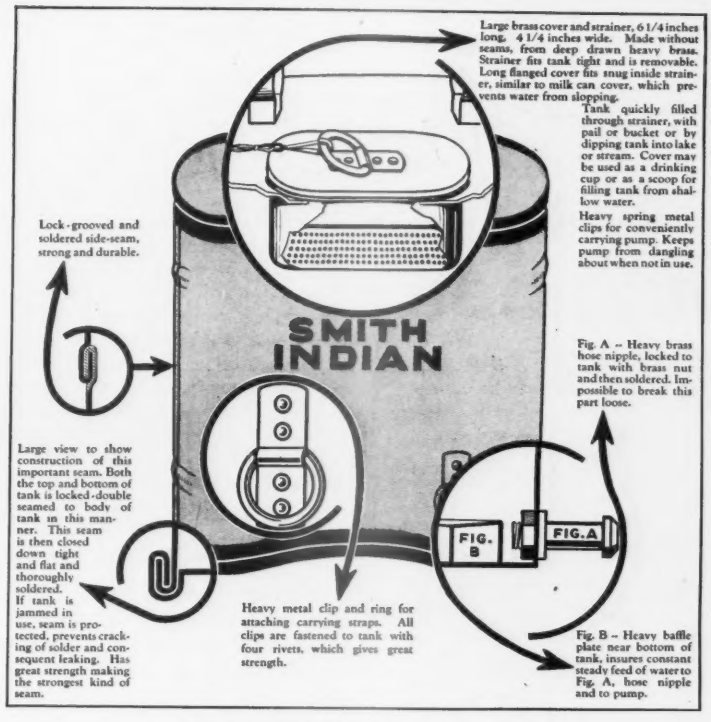
## Park Commission Urges Passage of Cramton Bill

The National Capital Park and Planning Commission, in its annual report recently made public, urges adoption of the Cramton park purchase (H. R., 26) measure now pending before Congress. This bill provides for an advance of $16,000,000 from the federal treasury for the purchase of parks, parkways and playgrounds, to be repaid without interest by annual payments from the combined revenues of the District of Columbia, equal to the present annual appropriation for park purposes.

It is pointed out that real estate values have been increasing at a rate of more than eight and eight-tenths per cent annually during the past five years, and that speeding up purchases will save the city thousands of dollars. As an example of the results of delayed action the commission cited the Piney Branch Parkway, connecting the area east of Sixteenth Street with Rock Creek Park. Purchase of the land was recommended in 1901, and as late as 1910 the entire area was available for $28,000. Purchases were finally completed in 1929. The total assessed value at the time of purchase was $204,479.83 and the total cost $359,345.19.

## Club Women Purchase Tract for Public Recreation

The Wilkins' farm, a 160-acre tract adjoining "Heart's Content," near Endeavor Pennsylvania, is to be purchased for recreational use by the Pennsylvania State Federation of Women's Clubs. Twenty acres of "Heart's Content" were recently donated to the Forest Service by the Wheeler and Dusenberry Company, of Endeavor, and an additional 100 acres have been purchased by the Government. The tract is said to be one of the finest stands of virgin pine and hemlock in the East.



Large brass cover and strainer, 6 1/4 inches long, 4 1/4 inches wide. Made without seams, from deep drawn heavy brass. Strainer fits tank tight and is removable. Long flanged cover fits snug inside strainer, similar to milk can cover, which prevents water from slopping.
Tank quickly filled through strainer, with pail or bucket or by dipping tank into lake or stream. Cover may be used as a drinking cup or as a scoop for filling tank from shallow water.
Heavy spring metal clips for conveniently carrying pump. Keeps pump from dangling about when not in use.
Lock-grooved and soldered side-seam, strong and durable.
SMITH INDIAN
Fig. A -- Heavy brass hose nipple, locked to tank with brass nut and then soldered. Impossible to break this part loose.
Large view to show construction of this important seam. Both the top and bottom of tank is locked-double seamed to body of tank in this manner. This seam is then closed down tight and flat and thoroughly soldered. If tank is jammed in use, seam is protected, prevents cracking of solder and consequent leaking. Has great strength making the strongest kind of seam.
FIG. B
FIG. A
Heavy metal clip and ring for attaching carrying straps. All clips are fastened to tank with four rivets, which gives great strength.
Fig. B -- Heavy baffle plate near bottom of tank, insures constant steady feed of water to Fig. A, hose nipple and to pump.

*Showing INDIAN Fire Pump in detail*

# The Smith INDIAN Fire Pump

## is the Choice of Men Who Want the Best!

WHY do U. S. Government and State forestry officials use the INDIAN Fire Pump? Look at the above diagram—there are the reasons. The INDIAN *never* fails to operate at a critical moment. No leather packing or parts to wear out. Pump, entirely of brass, gives positive action at all times. IT ALWAYS WORKS.

### Testimonials Sent on Request

Our files are full of letters from persons who have extinguished fierce, forest, grass and brush fires using only INDIAN FIRE PUMPS. We'll gladly send you copies. The tank, easily carried on the back like a knapsack, leaves arms free for going through heavy brush. Handiest, most efficient means ever devised for fighting forest fires. May be quickly refilled with pail or dipped into stream or lake. Easy pumping, throws unbroken, continuous, strong stream fifty feet. The pump is built for long, hard service. Never wears out. Wherever there are forests there should be an INDIAN.

*Pump ready for instant use. Notice freedom of arms*

*Send for Illustrated Descriptive Matter*

HEAVY BRASS PUMP 5 GALLON TANK WITH LARGE BRASS STRAINER AND BRASS COVER

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## Montana Establishes Bird Refuge

President Hoover has set aside as a refuge and breeding ground for birds, a 12,234-acre tract at Benton Lake, in Cascade and Chouteau Counties, Montana, near Great Falls. The new reservation will be known as the Benton Lake Bird Refuge and will be administered by the United States Biological Survey.

Benton Lake will constitute an important sanctuary for great numbers of migratory waterfowl. More than 3,000 acres of the refuge is water area, with an abundance of aquatic plant growth for cover and food for wild fowl. Several species of wild ducks, as well as wild geese, are found on the Benton Lake marshes during their migrations, and some of these birds breed there. Shorebirds also frequent the region, chiefly in migration. The area was formerly a part of the Sun River Reclamation Project.

## Association Officers for 1930

Following the count by the tellers, the Committee on Elections for 1930—comprised of George W. Sisson, Jr., E. A. Sherman and Samuel T. Dana—has made the following report of officers of The American Forestry Association for 1930:

George D. Pratt, of New York, president; George O. Vass, District of Columbia, treasurer; W. R. Brown, Vice-president of the Brown Company, Berlin, New Hampshire; W. B. Greeley, Chairman of the Conservation Committee, Camp Fire Club of America, New York; George Hewitt Myers, of the District of Columbia, and Augustus S. Houghton, of the New York State Reforestation Commission, New York, as directors; and for vice-presidents James B. Aswell of Louisiana, Representative in Congress; H. C. Baldridge of Idaho, Governor of Idaho; Harry B. Black, representing the Michigan Kiwanis Clubs; E. E. Brownell of California, Chairman of the Yellowstone Park Boundary Commission; Charles Livingston Bull of New Jersey, well-known artist; Mrs. Herbert Hoover, District of Columbia; George T. Houston of Mississippi, President of the Southern Forestry Congress; Clifton B. Howe of Canada, Dean of Forestry at the University of Toronto; Alexander Legge of Illinois, Chairman of the Federal Farm Board; Mrs. William Lockwood of New York, President of the Garden Clubs of America; Charles L. McNary of Oregon, United States Senator and joint author of the Clarke-McNary Law; Arthur Morgan of Ohio, President of Antioch College; George S. Parks of Alaska, Governor of Alaska; T. Gilbert Pearson of New York, President of the National Association of Audubon Societies; Joseph Hyde Pratt of North Carolina, representing the North Carolina Forestry Association; Mrs. John F. Sippel of Maryland, President of the General Federation of Women's Clubs; J. D. Tennant of Washington, Vice-President of the Long Bell Lumber Company; John J. Tigert of Florida, President of the University of Florida; Henry Baldwin Ward of Illinois, President of the Izaak Walton League of America; Frederic C. Walcott of Connecticut, United States Senator and Mrs. Francis E. Whitley of Iowa, representing the General Federation of Women's Clubs.

## Congress to Authorize Funds for Public Domain Commission

To make effective the work of President Hoover's Public Domain Commission, and to provide funds for its members to travel to meetings, Representative Don B. Colton, of Utah, introduced a bill (H. R. 6153) authorizing the President to appoint such a commission of not to exceed twenty-five persons to study and report on the conservation and administration of the public domain. The Secretary of the Interior and the Secretary of Agriculture are named as ex-officio members of this commission. The sum of $50,000 is authorized for necessary expenses, and a report to be sent to Congress by the President is called for by the first Monday in December, 1930.

This measure has the approval of President Hoover and follows closely along the lines outlined by him in his letter to Assistant Secretary of the Interior Joseph M. Dixon, which was read before the Conference of Western Governers in Salt Lake City, Utah, last July.

## Bird Banders Meet

The annual meeting of the Northeastern Bird Banding Association was held in conjunction with the Federation of the Bird Clubs of New England, January 16, at the University Club, Trinity Place, Boston, Massachusetts.

## Pennsylvania's Planting Record

Tree planting in Pennsylvania reached a record high during 1929, with a total of 9,325,139 trees established on state, private and industrial forests. The Department of Forests and Waters broke all records set during the last ten years. A total of 1,120,603 trees were planted in the State Forests. New plantings covered 568 acres and reinforcements of previous plantations 404 acres.

Other agencies engaged in tree-planting enterprises in the state and their records for 1929 were as follows: State and Federal lands, exclusive of State Forests, 621,992 trees; mining companies, 1,108,500; water companies, 1,044,000; and other industries 848,000; individuals, 3,682,097; municipalities, 325,000; associations and clubs, 435,525; schools, 86,422; and churches, homes and private hospitals, 53,000. Of this number, mining and water companies and other industries planted more than three million.

## Prizes for Best Humane Traps

The American Humane Association, 80 Howard Street, Albany, New York, has announced its third annual humane trap contest, the purpose of which is to encourage inventors and trappers to produce traps that will make the taking of animals more humane.

The first prize will be $100; the second, $35, and the third prize $15. Winners of the contest will be eligible to compete for the $10,000 prize offered by the National Association of the Fur Industry.

## Would Anybody Like A Nice Buffalo?

Zoos and other public institutions, as well as individuals, may obtain elk and Buffalo free of charge from Yellowstone National Park as long as the surplus supply lasts, it has been announced by the National Park Service of the Interior Department.

A warning has been issued that neither of these animals is suitable for pets and, it is further added, those desiring them must attend to their capture and pay the expenses incidental to their shipment. Buffalo may be shipped at a rate varying from $55 to $70 per head, depending upon the age, and elk for from $7 to $30 per head, depending upon whether they are crated for individual shipment or shipped in carload lots without crating.

## Rue With Newsprint Bureau

John D. Rue, director of research of the Champion Fibre Company, Canton, North Carolina, has resigned to take up duties as engineer with the Newsprint Service Bureau, of which R. S. Kellogg is secretary.

Mr. Rue is well known to the American paper industry. He was graduated from Princeton in 1906 with a degree of B. S., and in 1908 with that of A. M. He carried on graduate work at Heidelberg University, the Zurich Polytechnikum and the University of Michigan, where he served as assistant professor of chemical engineering. From 1921 to 1927 Mr. Rue was in charge of the pulp and paper section of the Forest Products Laboratory at Madison, Wisconsin.

## Fires Sweep 100,000 Acres of Louisiana Forests

Due to drouth and a reorganization of protected areas in northern Louisiana which left some localities without protection, Louisiana suffered heavy losses from forest fires during 1929. Between July 1 and December 1, approximately 100,000 acres out of 4,142,750 acres under protection or two and five-tenths per cent, were burned, N. D. Canterbury, retiring State Forester, announced in a recent report. Areas not under the protection of the fire prevention unit of the department suffered losses estimated to vary from thirty to seventy-five per cent.

## Alaskan Seal Herd Increases

The annual census of the Alaskan seal herd, computed annually by the Bureau of Fisheries, shows an increase of 62,643 head, or more than seven per cent, during 1928. The total number of seals of all ages and classes in the herd on August 10, 1928, was 871,513.

Control of the herds was assumed by the government in 1911 and at that time there were about 132,000 seals of all classes in the islands. In other words the herds have been increased more than sixfold during the last eighteen years and at the same time have produced thousands of skins each year for the market. Only bachelor seals are taken. The seal industry is one of Alaska's most important sources of revenue and, under government supervision, there is no longer danger of their extermination.

## Gypsy Moth in Southeast Vermont

Just when the western counties of Vermont seem to have succeeded in freeing themselves of gypsy moth infestations, the pest has put in its appearance in towns along the Connecticut River, from Springfield down to the Massachusetts line. The new infestation was disclosed by scouting work conducted by the state department of agriculture and by training crews of the United States Plant Quarantine and Control Administration.

Whether or not the somewhat milder climatic conditions in the southeastern corner of the state make up the controlling factor in the situation, is being studied by entomologists. Meanwhile owners of trees throughout the state have again been cautioned to watch carefully for the presence of egg masses and to treat them with creosote if any are found.

## Tennessee Children Compete in Forestry Contest

"What Will Well-Protected Forests Mean to Fentress County?" was the subject of an oratorical contest conducted this fall by District Forester Tom B. W. Watkins, of the Tennessee Division of Forestry, and O. O. Frogge, Superintendent of the Fentress County Schools. Pupils enrolled in grades five to eight, inclusive, were eligible. Each competitor was furnished with special literature on the subject by the State Department of Forestry.

Francis Wright, Forbus School, won first prize, $15; Nola Taubert, Armathwaite School, second prize, $10; Clara Hix, Long Branch School, third prize, $5, and Mabel Stockton, Allardt School, fourth prize, $1 and a "History of Fentress County." State Forester J. S. Maddox was chairman of the judging committee.


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## American Woods in the Tropics

Upon returning from a tour through Central America, during which he studied wood construction methods in various countries, Axel H. Oxholm, director of the National Committee on Wood Utilization, stated that wood-using practices in the Panama Canal Zone are the most efficient of their kind. In spite of the fact that climatic conditions, insects and wood borers seem to combine in the tropics to destroy all materials of organic origin, wood is playing a remarkably important part in building and construction, he stated.

This, he said, shows that, through engineering skill, the difficult service conditions of the region have been controlled. Among American woods which are most popular, Mr. Oxholm listed the California redwood and cypress, the southern yellow pine and the Douglas fir, selected either on account of their natural resistance to decay or insect attack.

## Junior Foresters and Range Examiners Wanted

The United States Civil Service Commission has announced two open competitive examinations for junior forester and junior range examiner to fill vacancies in the United States Forest Service, the Indian Service, and the Bureau of Biological Survey. Applications for junior forester must be filed with the Civil Service Commission not later than February 18, 1930. Applications for junior range examiner must be filed by March 5, 1930. According to the Civil Service Commission, the duties of appointees as junior foresters will be in subordinate work along such lines as timber sales, scaling and marking timber on small sales; improvement in the construction of roads, trails, and other engineering works; timber cruising and mapping; forestation, both nursery and planting projects; protection from fire, insects, and diseases; wild life management; ranger district administration; and research in silviculture, products, range management, and economics at forest and range experiment stations, or in Washington. The entrance salaries range from $2,000 to $2,500 a year.

The duties of appointees as junior range examiners will be in subordinate assignments on such lines of work as range reconnaissance and surveys, range management, and range development in general; ranger district administration; wild life management; and research in range management, silviculture, ecology, forest protection, watershed protection and economics at forest and range experiment stations, or in Washington. The entrance salaries range from $2,000 to $2,500 a year.

## $200 in Prizes For Outdoor Photographs

The American Forestry Association invites everyone in the United States and Canada to compete in its Prize Contest for Outdoor Photographs. Any outdoor subject will be considered—trees, forests, reforestation, lumbering, wild life, hunting, fishing, exploration, and other phases of forest and tree life.

The Contest opened January 1, 1930, and closes at midnight October 1, 1930. Send in winter subjects now and follow up with spring and summer subjects. There is no limit to the number of photographs a contestant may submit.

### RULES OF CONTEST

The name and address of the photographer must be printed on the back of each photograph.

Enclose with each selection of photographs sufficient postage for return if not available. Unavailable photographs will be returned as soon as rejected by the judges, irrespective of closing date of the contest.

While every possible care will be taken, The American Forestry Association cannot be responsible for any photographs that may be lost through the mails or in handling.

Photographs previously published or sold to other magazines, newspapers, or periodicals cannot be considered. Upon the award of a prize or payment for a photograph, the contestant surrenders all publication rights to the American Forestry Association.

Do not submit negatives as they will not be considered. Address all photographs to the *Prize Contest Editor, The American Forestry Association,* Lenox Building, Washington, D. C. Unless so addressed, photographs will be handled as regular material.

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| | |
|---|---|
| First Prize | $100 |
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| Fourth, fifth and sixth prizes each | 10 |

Seventh, eighth, ninth, and tenth prizes, each one year's subscription to American Forests and Forest Life.

## Timberland Investment Corporation Formed

A corporation known as Forestry Associates, Incorporated, comprising business men who have been associated for several years with the timber industry, has been chartered under the laws of the State of Florida for the purpose of investing in cut-over timberland.

Purchases will be made of carefully selected tracts of second-growth land which, the corporation believes, will yield excellent returns when operated under modern and improved methods of commercial forestry practice. A tract of 39,000 acres in Levy County has been selected for the initial purchase. A conservative estimate of the returns from naval stores, cross ties, lumber and other forest products, returned after a careful survey, indicated that the entire investment in this property could be returned within the next four years and that, at the end of that time the potential value of the property would be far in excess of the purchase price.

L. W. Brown, of the J. C. Penney-Gwinn Corporation, Jacksonville, is president of the corporation; M. J. Roess, of the Caropa Investment Company, Jacksonville, and P. D. Watkins, of Palatka, are vice-presidents, and S. Bryan Jennings, of Jacksonville, is secretary and treasurer.

## Connecticut Association Holds Annual Meeting

The annual meeting of the Connecticut Forest and Park Association, Incorporated, was held January 11 at the Hotel Garde, New Haven. Following a business session for reports and the election of officers, an open session was held with addresses by G. Harold Pim, Raymond Torrey, Miss Mary B. Weaver, Herbert Evison, and Dr. George A. Works.

## Bill to Protect Bald Eagles

Protection of the American bald eagle from possible extermination is provided in bills recently introduced in the United States Congress. Peter S. Norbeck, of North Dakota, is sponsor for the Senate bill (S. 2908) and August H. Andresen, of Minnesota, for the House bill (H. R. 7994).

The new law would provide a heavy fine for anyone who kills a bald eagle "within the continental United States, Alaska, Porto Rico and Hawaii." It is backed by the National Association of Audubon Societies and the National Committee on Wild Life Legislation.

## Michigan Park Area Extended

During December the Parks Division of the Michigan Department of Conservation added 9,468 acres of land to that previously made available for state park purposes.

The Conservation Commission reserved from sale 6,632 acres of state-owned land, desired by the Parks Division for use in the future; 2,046 acres in Houghton, Keweenaw, Loelenaw, and Benzie Counties were transferred from the Forestry Division, and two plots, comprising four hundred and forty acres, respectively, in Chippewa and Crawford Counties were turned over to the parks division. A twenty-five-year lease on 250 acres of sand dune territory along Lake Michigan was accepted from the Edward K. Warren Foundation of Three Oaks.

## Recreation Maps

A new type of map, designed to facilitate and promote pleasure travel in the United States, will make its debut this spring under the seal of a newly organized firm of map makers in New Jersey. Instead of including every possible place name according to population and every existing highway classified as federal, state, or local, "Recreation Maps" will consider all features in the light of their recreational value. Highways will be judged by their scenic beauty, traffic density and surface. The first map book will show twelve two-week vacation tours—motor trips from New York City.

## Nolan Reintroduces Quetico-Superior Bill

Representative Nolan, of Minnesota, early in December reintroduced a bill (H. R. 6981) withdrawing from entry or appropriation under the public land laws more than 14,000 square miles along the Minnesota-Ontario boundary. This area, covered by the Rainy Lake watershed, has been proposed as an International Forest and Park to promote better protection of the lands and waters for the production of forest products, the development and extension of recreational uses and the preservation of wild life.

The bill was introduced in the Senate in 1928 by Senator Shipstead, and in the House of Representatives in 1929 by Representative Newton, now secretary to President Hoover. Mr. Nolan succeeded Mr. Newton in Congress.

## Cold Drives Arctic Owls South

According to a recent newspaper dispatch from Great Falls, Montana, arctic owls are invading Montana for the first time in ten years, testifying to exceptional cold within the Arctic Circle. Apparently driven south in search of food, the large birds have been seen in various sections of northern Montana, the report stated.

## New Hampshire Boys and Girls Turn to Forestry

A total of 1,287 boys and girls in New Hampshire engaged in forestry work, such as tree planting, thinning, weeding, and pruning, or made collections of wood and leaf specimens during 1929, Extension Forester K. E. Barraclough has reported. Standard 4-H Club forestry projects engaged the attention of 743 youngsters and 557 completed the projects undertaken.

They planted nearly 400,000 trees, donated by the State Forest Service, as many as had been planted during the previous three years, and weeded, thinned, harvested and pruned on 484 acres. A standard planting 4-H forestry project was 1,000 trees for those over sixteen and 500 for those under that age. New Hampshire had, at the end of the year, a total of forty-three organized 4-H Forestry Clubs.

## Yale Reunion

The third decennial reunion of the Yale School of Forestry will be staged February 21-22 at New Haven. Sam Spring, '03, will be master of ceremonies at the banquet, February 21, and speakers will include President Angell, Gifford Pinchot, and William B. Greeley.

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# The Forest Post-Bag

So many letters of interest drop out of our mail bag each morning we want to be generous with them. Watch for The Forest Post-Bag, and share our pleasure and profit. Comment on this column is invited.

Writing to Mr. W. C. McCormick, Regional Director of the Southern Educational Project of The American Forestry Association, the West Virginia Pulp and Paper Company—which has cordially cooperated in the work in the South—says:

"We wish to take this occasion to congratulate you on the good work that you are doing in the interest of better forestry methods and greater utilization. I think we all realize—and we certainly had this idea when our film 'When the Trees Talk' was prepared—that the greatest conservation would come about by the elimination of forest fires, particularly in the Southern States. If we can be of any additional assistance to you, please do not hesitate to call upon us."

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Wilderness lovers will cordially endorse what Mr. E. S. Anderson, of Brooklyn, New York, says of one of the high objectives of the Association's work:

"I am particularly interested in the third 'definite objective' to provide a place untouched by motor cars. There are few places now where one can escape these pests. Bar Harbor and Nantucket have surrendered to them and Bermuda will be next. I firmly believe that the carelessness of motorists in throwing away lighted cigarettes and matches in the wooded sections which have been opened up to them is more of a factor in causing waste of our forests by fire than it is generally credited with. In my opinion there will be no diminution of forest fires until drastic penalties are imposed upon careless motorists or they are barred from forest reservations entirely."

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Referring to the matter of flood control on the Mississippi, Maurice E. Cumiskey, of Margate City, New York, comments vigorously:

"Your editorial 'Miscontrolling the Mississippi' is certainly illuminating to me. I am surprised that such ignorance on the part of the Commission on the subject exists. I am in accord with your resolution to have a competent forester placed on the Commission. Why, forests are the store houses of rainfall and creators of streams. Take the barren waterless lands of North Africa, India, and China and trace the great lack of water to the absence of forests—the drying up of the streams and the woeful destruction in robbing nature of these watersheds. As you say, you can't prevent disease by building hospitals only—go to the source and cure the causes, and in storing up the rainfall in the natural way you will regulate the flow of water with the earth and spread its course inwardly—thus mitigating destruction."

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It is not often that we hear from a charter member of the Association, but Mrs. Mary Jewell Mermod, of Webster Groves, Missouri, has written:

"I think I have shown my devotion to my country by never failing to subscribe every year for myself and others. I was made a member by my brother when the Association was organized. That is what is called a 'charter' member, is it not? One of my nephews says the magazine has been one of the greatest helps to him in his poetic efforts. To me it is invaluable, for

*"I love its rocks and rills,*
*Its woods and templed hills.'"*

This is indeed a tribute from an old friend, and should any other charter members of the Association happen to read this, we would consider it a high privilege to hear from them.

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Mrs. Marian A. Dunning, of Bangor, Maine (may her tribe increase!), writes under date of the 2nd:

"Your communication of November 27 brought to my mind the fact that one of the magazines which I would thoroughly enjoy was not on my table and I am sending, at once, a check for $4 for a membership and the magazine.

"When I tell you that foresters took care of one hundred fifteen trees around my home you will understand how much these trees mean to me. Maples set out by my grandfather line each side of the street as well as my driveway, and must be at least eighty years old."

# Book News and Reviews

FORESTRY, by A. B. Recknagel and S. N. Spring, 225 pages with 14 pages of half-tone illustrations and one chart. Published by Alfred A. Knopf, price $3.

That forestry is emerging from the classroom and conference hall into the woods, is evidenced upon the pages of "Forestry." The authors begin with the story of how forestry started in the United States, proceed rapidly to a description of how forestry is being practiced. Many readers will be particularly interested in the chapter describing the application of forestry principles to lands now in forest. The authors have described actual conditions rather than to attempt to present hypothetical examples, and have chosen four National Forests which typify four sets of climatic, geographical and economic conditions; state forests in Pennsylvania and Connecticut which throw light on work whose results have been accumulating for more than 20 years; and three examples of forestry now being practiced by private lumbering companies in different parts of the country. These last examples help refute the idea that all forestry operations are conducted by federal or state governments, and all of the examples show how the classical silvicultural systems are being applied to modern conditions.

With a view toward molding the growing interest in constructive forestry into more tangible forms the authors suggest the possibility of a National Industrial Forestry Committee. The committee would correlate utilization with production and hasten the time when forestry is practiced upon privately owned lands.

The very readable text is supplemented by a voluminous appendix, a bibliography and an index. The appendix is largely historical and includes extracts from official documents dating back to 1865, areas of the National Forests through the thirty-one years since their creation, and a classification of the forests of the United States.

The book meets a real need in the growing field of forestry literature. The casual reader will learn something of America's forest problem and the extent to which it is being solved. The student who wishes to go more deeply into the subject will find it an admirable supplement to such books of long standing as Dr. Fernow's "Brief History of Forestry," and also his "Economics of Forestry."—G. H. C.

National Wild Life Reservations—Miscellaneous Publication 51—U. S. Department of Agriculture.

The Division of Game and Bird Conservation of the Bureau of Biological Survey has compiled a list of eighty-two areas under its administration. These are for the purpose of affording nesting, feeding or resting grounds for migratory birds and for animals requiring protection.

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FOREST FIRE AND OTHER VERSE. Collected and edited by John D. Guthrie, 321 pages, illustrated. The Dunham Printing Company, Portland, Oregon.

The verses in this volume are either written by forest rangers, forest workers and foresters, or about them, their lives and their work. It follows "The Forest Ranger and Other Verse," collected by Mr. Guthrie in 1919. As in the first book, the verses reflect the moods of the forest and the men who know them. There is feeling and melody, humor and pathos. The verses are characteristic of the woodsmen themselves. To the man who has known the forest trail and the campfire the book will bring back many soft memories.—E. K.

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KEOKUK DAM AND THE FISHERIES OF THE UPPER MISSISSIPPI RIVER. By Robert E. Coker. A study on a large scale of the effect of dams upon the species and movements of fish. It is based upon observations going back to 1903, although most of them have been made since the dam was completed in 1913. This is Document 1063. U. S. Department of Commerce, Bureau of Fisheries.

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FOREST POSSIBILITIES OF ASPEN LANDS IN THE LAKE STATES. By Joseph Kittredge, Jr., and S. R. Gevorkiantz.

With 21,000,000 acres of aspen-birch lands in the Northern Lake States, and the present limited use of aspen for pulpwood, excelsior, lumber and fuel, there is presented a large problem in land use. Inasmuch as comparatively little of the land is suitable for modern agriculture the desirable solution is to encourage natural conversion of

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the lands into stands of pine and spruce. This can be augmented by planting at a cost of about $8.00 per acre, which the authors report will yield four per cent interest on the investment. They suggest that states, counties, and the federal government acquire and hold these aspen lands. Technical Bulletin 60, University of Minnesota University Farm, St. Paul, Minnesota.

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WOOD CONSTRUCTION. By Dudley F. Holtman, 712 pages, numerous illustrations and tables, published by McGraw-Hill Book Company. Price $6.

Although referred to as a handbook for engineers, architects and builders, "Wood Construction" is more nearly an encyclopedia. Mr. Holtman has performed a herculean task in bringing together a mass of information on wood and its uses in construction such as was previously available only in scattered publication of numerous government bureaus and trade associations. Dedicated to Herbert Hoover, President of the United States, the book was conceived and sponsored by a special committee appointed by Mr. Hoover when he was Secretary of Commerce and Chairman of the National Committee on Wood Utilization. The book is designed particularly for engineers, architects and builders, but it will serve the needs of all foresters who specialize in any of the phases of wood technology.—G. H. C.

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OUR MOST POPULAR TREES. By Lydia Northrop Gilbert. George Sully & Company, Incorporated, New York, 1929. Price $1.50.

Brief descriptions of forty-eight trees are included in this diminutive volume which slips easily into your pocket. For each thumb-nail sketch there is a colored plate showing the detail of the tree, bark, fruit, blossom, and leaf.

This volume could serve only the very amateur student and children. It tells where the different trees are found, their family, height, diameter, weight of wood, and use. The information is somewhat superficial, and Miss Gilbert has made her selections rather haphazardly, we fear, if, as advertised, the volume is intended to cover the most popular trees of North America.

Indeed, it is difficult to apprehend any well-defined plan of selection. Although the banana tree, rarely seen in this country, is included, such outstanding and widely known species as the native sweet chestnut, redwood, Douglas fir, and western yellow pine are missing from the table of contents.—A. C.

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ERRATA.—In the April issue an erroneous statement was inadvertently made to the effect that Alfred Hutty founded and directed the Carolina Art Association and Winter School of Art after the war. The Carolina Art Association was founded in 1858, and its art school in 1882. This school Mr. Hutty directed for a period of five years.

## Forest Products Association Meets

The Empire State Forest Products Association, at its annual meeting in Albany, re-elected its board of directors as follows: George N. Ostrander, chairman; John N. Carlisle, W. C. Hull, Clarence L. Fisher, John H. Hinman, E. A. Sterling, Thomas H. Stirling. Officers elected were: President, George W. Sisson, Jr., of Potsdam; vice-president, John N. Carlisle, of Watertown; treasurer, W. Clyde Sykes, of Conifer, and secretary, A. B. Recknagel, of Albany.

In addition to discussing legislative matters of interest to members, the association took up the question of cooperation with the United States Department of Commerce in a survey of non-utilized wood in New York State. It was reported that the department was ready to start the survey as soon as a specified amount of money is raised in the state. It was the consensus of opinion that the required funds should be raised by the wood utilization committee of which Mr. Sisson is chairman.

## Large Areas of Southern Timber Being Cruised

A detailed cruise of about 30,000 acres of original growth timber in southern Alabama was recently completed by the forest engineering department of The James D. Lacey Company, which during the last weeks of December was engaged in cruising a 32,000-acre tract in central Florida as well as two smaller turpentine properties, one of 5,000 acres and another of 7,000 acres, in southeast Georgia.

One of the largest projects of the company—the cruising and mapping of 250,000 acres in west Florida—was undertaken in December. The land is owned by the Florida Industrial Company of Jacksonville.

## Perkins Succeeds Holtman on Wood Utilization Staff

The resignation of Dudley F. Holtman as construction engineer of the National Committee on Wood Utilization of the Department of Commerce and the appointment of Nelson S. Perkins to take his place has been announced by Axel H. Oxholm, director of the committee.

Mr. Perkins was graduated from Cornell University and assisted Mr. Holtman in the preparation of the committee's wood construction manual. He was formerly with the National Lumber Manufacturers Association.

Mr. Holtman has been connected with the National Committee on Wood Utilization since it was established in 1926. He recently completed the preparation of the Committee's manual, "Wood Construction."

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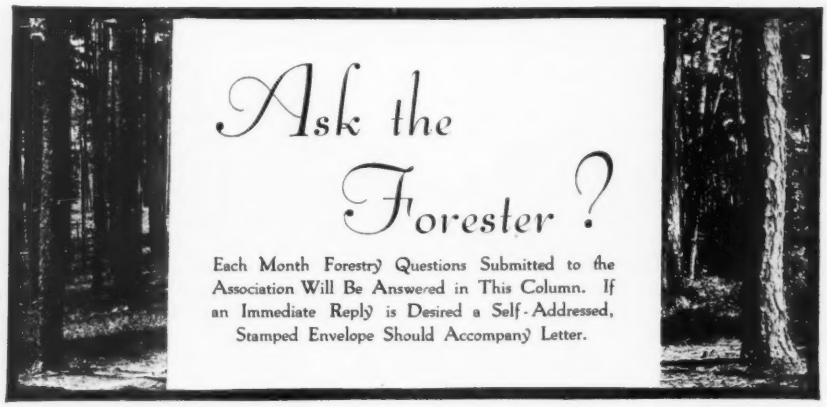
Ask the Forester?
Each Month Forestry Questions Submitted to the Association Will Be Answered in This Column. If an Immediate Reply is Desired a Self-Addressed, Stamped Envelope Should Accompany Letter.

QUESTION: What is the amount and value of the leaf litter that accumulates under a forest?—*C. R., Mississippi.*

ANSWER: About a ton of leaves or needles or other organic matter fall yearly on the ground in an acre of well-stocked pine woods. This amount may be doubled in the case of some broad-leaf forests. The Forest Service reports that for several years part of an even aged stand of loblolly pine about fifty-five years old in eastern Maryland was raked annually and part was left in its natural condition. That which was raked every year had a stand of 18,000 board-feet per acre, while the one that was left with the blanket of pine straw and other material had 28,400 board-feet to the acre. The litter may be said to have increased the value by over $1.00 an acre each year.

Studies in North Carolina show that a ton of leaf litter from pine forests contains about 12.1 lbs. of ammonia (N. H. 4), 2.8 lbs. of phosphoric acid (P. 2 0.4), 3.9 lbs. of potash (K. 2.0). This would make the wholesale value of the fertilizer constituents in a ton of leaf litter worth more than $2.00.

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QUESTION: What varieties of fish are found in Connecticut Lake, in New Hampshire?—*S. G. R., New York.*

ANSWER: The Bureau of Fisheries of the Department of Commerce reports that in addition to brook, brown, rainbow and lake trout, the Connecticut lakes in northern New Hampshire have been stocked with Quinnat salmon. The lakes also contain landlocked salmon.

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QUESTION: What are the principal federal laws affecting forestry passed since 1920?—*W. G. E., Pennsylvania.*

ANSWER: The Clarke-McNary law providing for forest protection in cooperation with the states, the growing of forest planting stock, the extension of forestry to farmers and study of forestry taxation was passed in 1924. The McNary-Woodruff law refers to the Weeks law passed in 1911 and outlines a program of forest purchases in the eastern states. The provisions of this law culminate with the completion of the appropriation for the fiscal year beginning July 1, 1930. This law was passed in 1928. The McNary-McSweeney law passed in 1928 is using a comprehensive program of forest research and is the basis upon which The American Forestry Association asks increased appropriations for purposes of forest investigations.

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QUESTION: What is the source and commercial production of the gum, commercially known as "styrax"?—*G. N. U., New York.*

ANSWER: "Styrax" is known more generally as "Storax," and is the gum exuded from the inner bark of the Asiatic liquidambar tree. This is similar to the American sweet gum (liquidambar *styraciflua*), but practically no commercial quantities are produced in America. Commercial sources are in Asia Minor. "Storax" is used in soap perfumery, in the tanning of fine leathers and in flavoring tobacco.

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QUESTION: When is the best time to plant chestnuts, hickory nuts, butternuts and walnuts?—*P. H. L., New York.*

ANSWER: The safest time is in the early spring. To carry them over the winter, bury them six or eight inches under the ground in a sack or perforated tin bucket. This will keep them moist, get them ready for an early germination and protect them against squirrels or other rodents that might dig them up. Plant them about two or three inches beneath the surface. A sharpened stick makes a good dibble with which to make the holes.

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QUESTION: I am told the pine beetle is operating quite extensively in California. Does it spread rapidly? Is it difficult to control?—*W. J. L., California.*

ANSWER: The pine beetle does extensive damage throughout the entire western region. Special appropriations were made by Congress during the past regular session to promote means to study its life history and more adequate control. It spreads rapidly and control is largely through destruction of the infected trees. For some years the Forest Service has been cutting all infected trees and burning the bark and twigs. More recently they have developed a plan whereby the trees are sprayed with oil and burned as they stand. This generates enough heat to kill the grubs in the bark and outer wood layers. Either method is expensive.

## Bag Limits on Waterfowl Reduced

Secretary of Agriculture Hyde has recommended that the daily bag limits of ducks and geese allowed gunners be reduced for the season of 1930-31, by changes in the federal regulations under the Migratory Bird Treaty Act.

The regulations will go in force after the present season. The bag will be reduced from the present limit on ducks of twenty-five to fifteen a day and on geese from eight to four a day. A possession limit of thirty ducks and eight geese is also prescribed.

The necessity for this reduction has become evident from exhaustive field investigation by the department which has disclosed that water fowl have not been holding their own in the past year. The unusual drought that prevailed during the past season, and the reclamation of large former breeding grounds in the Northwest States and Canada, has resulted in cumulative losses of great areas of marsh and water, it was stated.

Twenty-nine states have passed legislation reducing the bag below the federal standards, and many of them have protested against federal standards being above their state limits because of the difficulties created in enforcement.

## Shepard Wins $1,000 Forestry Award

A system of cooperative control of logging methods and other phases of forest exploitation as a means of preventing continued forest destruction is the proposal of Ward Shepard, Acting Assistant Forester, United States Forest Service, which has been adjudged the winning solution in the nation-wide $1,000 contest sponsored by the Society of American Foresters.

Salient points in the prize-winning solution are the creation of federal, regional, and county cooperative forestry boards, which in cooperation with regional and local associations of forest owners and producers would work out better forest practices, promote regional inter-state legislation, and with Congressional sanction would control lumber production to prevent wasteful exploitation of the nation's timber reserve; establishment of a federal forest loan board and federal forest banks to furnish long-term loans at reasonable rates to finance constructive forestry, to purchase and finance the development of public forests, and to assist in the heavy burden of carrying large reserves of standing timber. The government would create and supervise this banking system, but the capital would come from private sources through the sale of forest bonds.

Negotiation of a treaty with Canada providing for joint public regulation measures to prevent deforestation and followed by an enforcement act giving the forest boards authority to work out local forest regulations, was also proposed by Mr. Shepard.

"The plan proposed," Mr. Shepard stated, "is based on full, democratic, localized participation by forest industries in working out reasonable reforms. All competent observers know that destructive logging is almost universal in our private forests, even those of the largest and richest corporations; that deforestation is proceeding on a scale unparalleled in history, and that no serious effort is being made to improve the practices responsible for such a condition."

## Forest Road Funds Allocated

The apportionment of $4,500,000 of federal forest highway funds as authorized by Congress for the construction of forest roads in and adjacent to the National Forests in the fiscal year 1931 has been approved by Secretary of Agriculture Hyde.

Representatives of the United States Forest Service, State Highway Commissions, and United States Bureau of Public Roads will start immediately to make plans for expending the amounts apportioned to the various states and territories upon road projects upon which construction can be undertaken in the next fiscal year.

The authorization is apportioned among the states and territories for the next fiscal year as follows:

Alabama, $3,580; Alaska, $459,384; Arizona, $283,882; Arkansas, $42,227; California, $676,451; Colorado, $327,943; Florida, $13,534; Georgia, $7,849; Idaho, $490,985; Illinois, $390; Maine, $1,364; Michigan, $7,020; Minnesota, $29,879; Montana, $396,642; Nebraksa, $4,650; Nevada, $94,196; New Hampshire, $21,397; New Mexico, $201,512; North Carolina, $12,918; Oklahoma, $1,978; Oregon, $631,987; Pennsylvania, $8,008; Porto Rico, $532; South Carolina, $1,508; South Dakota, $39,591; Tennessee, $11,925; Utah, $165,839; Virginia, $15,085; Washington, $331,368; West Virginia, $7,015; Wyoming, $209,361.

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## Ask Increase for Alaska Wardens

Three additional game wardens in Alaska are provided in the agricultural appropriation bill (H. R. 7491) as passed by the House of Representatives on December 20, 1929. On December 19, while the bill was under discussion, Representative L. J. Dickinson, of Iowa, chairman of the sub-committee on agricultural appropriations, moved to increase the appropriation for the Biological Survey by $15,000 for this purpose. This is the only change in appropriations for conservation made by the House after the bill was reported out by their committee.

## Reforestation Under Way on Lincoln Memorial Tract

Reforestation of fifty acres of the 100-acre tract in Spencer County, Indiana, where the State proposes to erect a memorial to Nancy Hanks Lincoln, is to be begun immediately, J. L. Holcomb, chairman of the memorial committee, has announced.

The Lincoln cabin site has already been cleared of underbrush and the mud streets closed, in what was once a part of Lincoln City. Erosion on the hill slopes has been stopped by grading and planting. Thirty acres of the original Thomas Lincoln farm, for years part of the city, is to be planted this year. This tract was purchased for $32,000 by Frank C. Ball and presented to the memorial project.

Donald B. Johnston, landscape architect, is in charge of the planting program and Charles C. Deam, State Research Forester, is advising with the committee, forestry division officials of the Conservation Department assisting.

## Pennsylvania Deer Problem Studied During Tour

A three-day tour into deer sections of Pennsylvania, for the purpose of studying the state deer problem on location, was completed recently by a special fact-finding committee of State and Federal officials. The committee comprised John J. Slautterback, executive secretary of the State Game Commission; Dr. W. B. Bell, in charge of biological investigations, Bureau of Biological Survey; Vernon Bailey, chief field naturalist of the Survey; Dr. C. D. Marsh, poisonous plant specialist, United States Bureau of Animal Industry; and Dr. Thomas E. Winecoff, in charge of research for the Game Commission.

The committee went first to Bucknell University to discuss progress of studies of the nose fly in deer with Professor Norman H. Stewart, and next visited the experimental feeding station at State College. The following day they toured Clearfield County, studying food conditions. Refuge No. 1, Clinton County, and No. 6, Center County, also were inspected. Food conditions at the latter refuge were serious.

## Neal General Manager of American Pulp and Paper Association

Jesse H. Neal, former secretary of the Associated Business Papers, Inc., has been named general manager of the American Paper and Pulp Association.

Mr. Neal has served as secretary-treasurer of the Associated Advertising Clubs of the World; secretary-treasurer of the Publishers Advisory Board; director of the New York Advertising Club; and vice-president of the Trade Association Executives.

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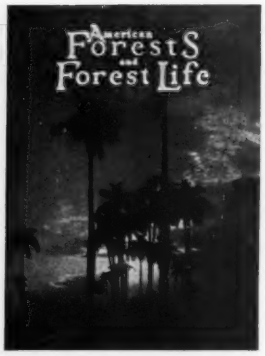


*American Forests and Forest Life is sent monthly to all except Annual Members*

# Production and Use of Wood Greatest Future Forest Need, Says Compton

The production of timber or wood for the purpose of supplying a raw material and the liberal and wise use of wood by the public were declared by Wilson Compton, secretary-manager of the National Lumber Manufacturers Association, at the annual meeting of the Society of American Foresters, at Des Moines, Iowa, December 30, to be the most important forest objectives in the country.

Mr. Compton based his belief on two great changes in forest economy which have developed during the last quarter century—the practical dissolution among the American people of their various dependence upon lumber and wood products for security of life, safety, health, comfort, and for the maintenance of high standards of living, and the gradual transition of the lumber industry from an exclusively saw-milling industry to a diversified wood conversion business.

Future forest needs for watershed protection, recreation facilities, national defense, farm relief and land use were pictured as being to a large extent intangible, and not lending themselves to exact analysis. The objectives of the production of timber or wood for the purpose of supplying a raw material were held as tangible salable forest products, capable of individualized ownership and control.

Liberal and wise use of wood, he pointed out, are necessary if the people of America are to receive permanent and public benefits from forests and forest uses. He maintained that private enterprise in forestry must support itself from its own income, and that the more definite the assurance of future security in forestry investment, and the prospects of adequate financial returns, the greater the incentives to forestry enterprise. The uncertainties of future policies in regard to forest taxation and protection against fire, insects and disease might be overcome with the reasonable assurance of sustained and liberal public use of forest products in their diversified forms.

"There are at present about 500,000,000 acres of land in the United States ordinarily classified as forest land," said Mr. Compton. "Recently it has been proposed to add to the classification about 100,000,000 acres, heretofore classed as farm land. Whether this or any other land classification is logical and sound depends upon the viewpoint from which it is made. Originally in this country there were about one billion acres in forests; now a half billion. That fact by itself does not, however, mean that the present half billion acres ought to be permanently in forest any more than the original division of forest and other lands meant that our ultimate national objective should be to restore a billion acres to forests. Abandoned farm lands, which were at one time in timber, are part of the so-called 'farm' problem, not the 'forest' problem. Yet the only fact which separates these lands from the forest problem is the circumstance that for a period of years an unsuccessful effort was made to farm them profitably. They never were good permanent farm lands."

Mr. Compton referred to the report of the Forest Service in 1920 in which occurred the statement that the annual consumption of forest products in the United States would continue to be at least twenty-five billion cubic feet, and the recommendation that every acre of forest land must be restored to productivity if the demand was to be met. He also referred to a statement made two years later to the effect that at the per capita consumption at that time the United States would in 1950 require thirty-two billion cubic feet, of which saw timber would amount to more than sixteen billion cubic feet.

"The aggregate annual consumption today is thirty-two billion feet," said Mr. Compton. "If the analysis in these reports had turned out to be correct, the lumber, pulp and paper and wood-using industries generally would today have been the prosperous occupants of a sellers' market. The beneficiaries of increasing demand for products limited by diminishing sources of supply would have provided an exceedingly forceful economic incentive to commercial reforestation."

The thing that actually occurred, Mr. Compton pointed out, is that lumber, pulp and paper and the principal wood-using industries found themselves the victims of a buyers' market. Their task today is not to find the raw materials sufficient to meet public demand, but to find markets and buyers willing to take the volume of products which the lumber and wood-using industries can readily produce. The lumber industry is running on a basis of less than eighty per cent capacity, he said, adding that the use of lumber and wood products per capita has declined in the last quarter century over forty per cent and in aggregate volume one-fourth.

"The vital point is that today the American people use lumber not from necessity but from choice," he said. "The prophets of forest disaster during the past quarter century have pictured lumber and wood as providing the indispensable necessities of life without which public safety, public health, comfort, convenience, and security would be greatly imperiled. This is a beautiful thought. But the unsentimental forces of competition have demonstrated that beautiful thoughts alone will not sustain the vitality of the lumber and wood-using industries. The plain fact today is that lumber is not at all indispensable to public security and comfort. Today there are practically no important uses for lumber for which there are

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not one or more substitutions of good quality, reasonably suited for the purpose."

There has been another important and plainly discernible development in wood utilization, said Mr. Compton, the trend in the lumber industry toward wood conversions. Nearly all of the mechanical characteristics and many of the chemical properties of wood are derived from its fiber substance—cellulose. Wood cellulose chemistry has produced finer "cotton" than cotton itself, he said. It has produced "rubber" as resilient, more impervious to moisture, more shock resistant than rubber itself. Some of the sharpest competition which sawn lumber is meeting today is from fiber boards.

"If, therefore, there is in the wood cell the vast potential wealth which scientists say is there, then that industry is merely blind which closes its eyes to the possibilities of sustained industrial progress thus opened. This represents the lumber industry's longest look ahead.

"A forest problem to be solved in terms of saw logs is one thing. A forest problem to be solved largely in terms of wood pulp bolts of convenient size is another thing. We shall, I believe, always want, and I hope will continue to need a substantial amount of high-grade sawn lumber in large sizes. But the chances are fair that this demand may in the future be met largely from those great areas of forests on which, irrespective of ownership, nature, aided only by protection against the scourge of fire, insects and blight, will always keep the forests growing. These areas probably should be maintained in public ownership or in the ownership of large corporations doing a highly diversified wood conversion business, and capable continuously of maintaining extensive timber properties, and of a standard of wood utilization approaching one hundred per cent of the tree, instead of the present prevailing forty or fifty per cent utilization.

"I venture the prediction that within the next quarter century there will be not only extensive additions to public forest land ownership but also large inter-regional consolidations of the ownerships of privately owned timber properties and lumber manufacturing and wood conversion plants. A quarter century ago alarmists pointed to an alleged but largely imaginary concentration of forest land ownership as containing a threat of future 'monopoly.' This fear has been completely exploded. In its place is the prospect of a type of proprietary consolidation which will seek not the phantom advantages of timber monopoly but the tangible advantages, through more diversified facilities, or complete timber utilization in refinement, fabrication, and wood conversion, and is the means of more efficient merchandising service. Centralized ownership which was the forest bugaboo in the past will become the forest boon of the future."

One of the greatest contributions American foresters can make to their leadership of forestry thought will be to make plain and unmistakable the fact that stoppage of the use of wood is not forest conservation, said Mr. Compton. There is no surer way, he held, to destroy forestry progress than to destroy its principal economic incentive—the liberal use of forest products.

One of the unfortunate, although probably inevitable reactions to this new thought on future timber needs, Mr. Compton believes, is that it is but an attempt to knock from under the whole scheme of forest conservation the props which have sustained it for half a century, and by argument undo the results of decades of effort to build a favorable forestry sentiment in America. This is not true, he maintains, adding that if it means abandonment, however, to the effort to inspire public anxiety and fear of an imaginative timber famine, and to incite indiscriminate public resentment as the responsible contributing causes against forest industries and those engaged in them, to that extent it will have done good.

"It is to be hoped, too, that it will not discourage the ceaseless, diligent and non-spectacular search for forestry truth," he said. "Facts are facts, and we may make no greater mistake than to ignore them. The facts today are much more distasteful and much more costly to the lumber industry than to the foresters or to the public at large. But there is no truth, comfort or security in attempting to conceal the facts behind traditions, fictions and myths. For many years the lumber industry, confronted with increasing competition of other materials, complacently placed its faith in the fact, which could not be denied, that previously, from the beginning in this country, wood had been the universally favorite material for building and industry. To keep its products in use the lumber industry had come therefore to rely on tradition, at a time when people were abandoning traditions. The public has demonstrated its ability to protect itself by using other materials; and this it is doing not from necessity but from choice."

## Virginia Ornithologists Organize

With about twenty scientists and nature lovers in attendance, the Virginia Ornithological Society was recently formed at a meeting held at Lynchburg College. The new society is to be state-wide with sub-groups operating in different sections and cities of the state. Its object will be bird study and the advancement of educational work on the economic and esthetic value of birds.

The compilation of an up-to-date catalogue of Virginia birds will be one of the first tasks undertaken by the new society. A monthly bulletin also will be published for members, with Dr. J. J. Murray, of Lexington, serving as editor. Ruskin S. Freer, professor at Lynchburg College, is president of the society. Charles O. Handley, state game commissioner, is vice-president and Miss Lulu B. Henderson, secretary-treasurer.

## Foresters Endorse Knutson Bill

By a resolution passed at its annual meeting in Des Moines, Iowa, December 30 and 31, the Society of American Foresters places itself on record as favoring the passage of the Knutson bill (H. R. 5410), which would provide for an enlarged program of forest planting on the National Forests east of the Rocky Mountains. The bill was introduced in the House of Representatives on November 21 by Mr. Knutson of Minnesota and will, therefore, come up for passage at the present session of Congress.

Section 2 of the bill would authorize an appropriation for the fiscal year ending June 30, 1932, of $150,000; for the fiscal year ending June 30, 1933, $300,000; and for each fiscal year thereafter, $400,000, to enable the Secretary of Agriculture "to establish and operate nurseries, to collect or to purchase tree seed or young trees, to plant trees, and to do all other things necessary for reforestation by planting or seeding National Forests east of the one hundred and second meridian of longitude and for the additional protection, care, and improvement of the resulting plantations."

Under section 3 of the bill the Secretary would be empowered to require deposits from purchasers of National Forest timber sufficient to cover the cost of such plantings as might be necessary on areas from which timber purchasers operate on the National Forests. These deposits would be covered into the Treasury of the United States and would constitute a special planting fund.

The Society also passed a resolution deploring the opposition of the American Nurserymen's Association to the distribution of tree seed and forest nursery stock by states and the federal government. The opposition of the nurserymen was expressed in a resolution at the annual meeting of the American Nurserymen's Association at Boston last summer. The Foresters' resolution points out that the nurserymen's opposition has in some instances prevented the establishment of state nurseries and that this opposition has been exerted without the American Nurserymen's Association making any effort through its member companies to grow and sell reforestation stock in quantities sufficient to meet the demand.

A third resolution passed by the Society urges that all plans of forest management should adequately recognize and provide for the coordinated use and development of social values peculiarly inherent in forests. These values, the resolution states, enrich human life by their quality of natural beauty, their suitability for the preservation of wild life, and by their inspirational and educational values. Impending changes in American life, the foresters point out, are important in promoting the broadest use of forests, in promoting cultural education and recreation standards of our people. These social values in forests are frequently paramount to the industrial need for wood and they would, therefore, be given full recognition.


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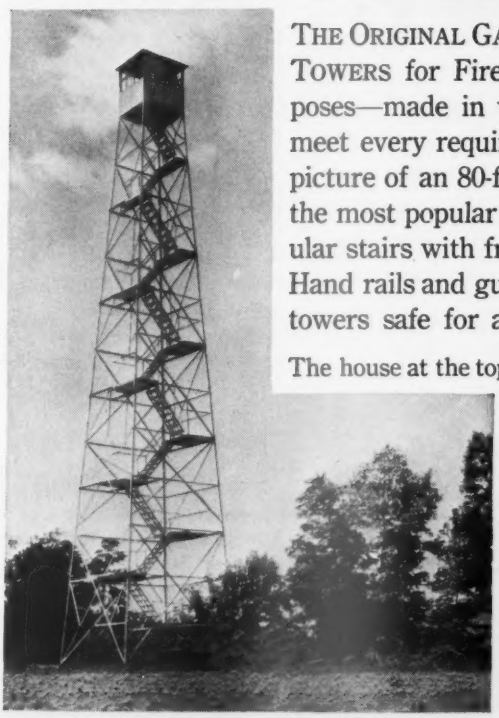

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## Honor Living Christmas Trees

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as representative of the whole community to gather about that Christmas tree, which represents the common fireside of the nation, in the true Christmas spirit of cheer, generosity and reverence. As the community has met here before, so will it continue to meet around this living tree through the years to come. We will leave in the hands of some of the children gathered here tonight the responsibility of seeing that this beautiful custom is carried forward into the future, for it is of the children that we think on Christmas Eve. It is their radiant joy and happiness that gives us all a feeling of unity that makes the whole world akin.

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## Boy Scouts Preserve Nut Trees

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## Tree Show at Reading

A forestry, conservation and tree show will be held at Reading, Pennsylvania, during the week of February 17, it has been announced. It will be under the auspices of a group of interested citizens, headed by Solon L. Parkes.

Among those to exhibit at the show are the United States Forest Service and the Pennsylvania State Department of Forests and Waters.

## WHO'S WHO

### *Among the Authors in This Issue*

*B. F. Williamson*

B. F. WILLIAMSON is President of the Florida Forestry Association and one of the most active conservationists in the South. He makes his home at Gainesville.

BEN EAST, Nature Editor of the Grand Rapids, Michigan, *Press*, and camera hunter extraordinary, has contributed many unusual stories to American Forests and Forest Life as well as other magazines. He was the first person in Michigan to band an American bald eagle in its nest.

DAN D. CASEMENT is a Colorado stockman of wide experience, and has for many years been a close student of western range conditions. In 1926, the Secretary of Agriculture selected him to arbitrate the question of grazing fees on the National Forests and the methods and principles of range appraisal as followed by the Forest Service, both of which were under attack by western stockmen. Mr. Casement's report upheld the Forest Service in practically every instance.

DAVID ARRIVEE is Assistant Supervisor of the Targhee National Forest, in Idaho. He was graduated from the University of Minnesota in 1911.

*Ignatius Phayre*

IGNATIUS PHAYRE, world-traveler and well-known Irish novelist, is in reality William George Fitz-Gerald, brother of the Right Honorable Desmond Fitz-Gerald, Minister of Defense in the Cabinet of the Irish Free State. In 1925 he undertook a three-year tour of all the Latin American Republics. More recently he explored in Africa.

T. P. MALOY is City Forester of Rochester, New York, and R. B. WILSEY is associated with the Eastman Kodak Company.

ELERS KOCH is Assistant District Forester, United States Forest Service, Missoula, Montana; CLAYTON W. WATKINS is Extension Forester of Nebraska; J. C. SCOTT calls Berkeley Springs, West Virginia, home.

G. H. COLLINGWOOD is Forester for The American Forestry Association, and ERLE KAUFFMAN is the Assistant Editor of AMERICAN FORESTS AND FOREST LIFE.

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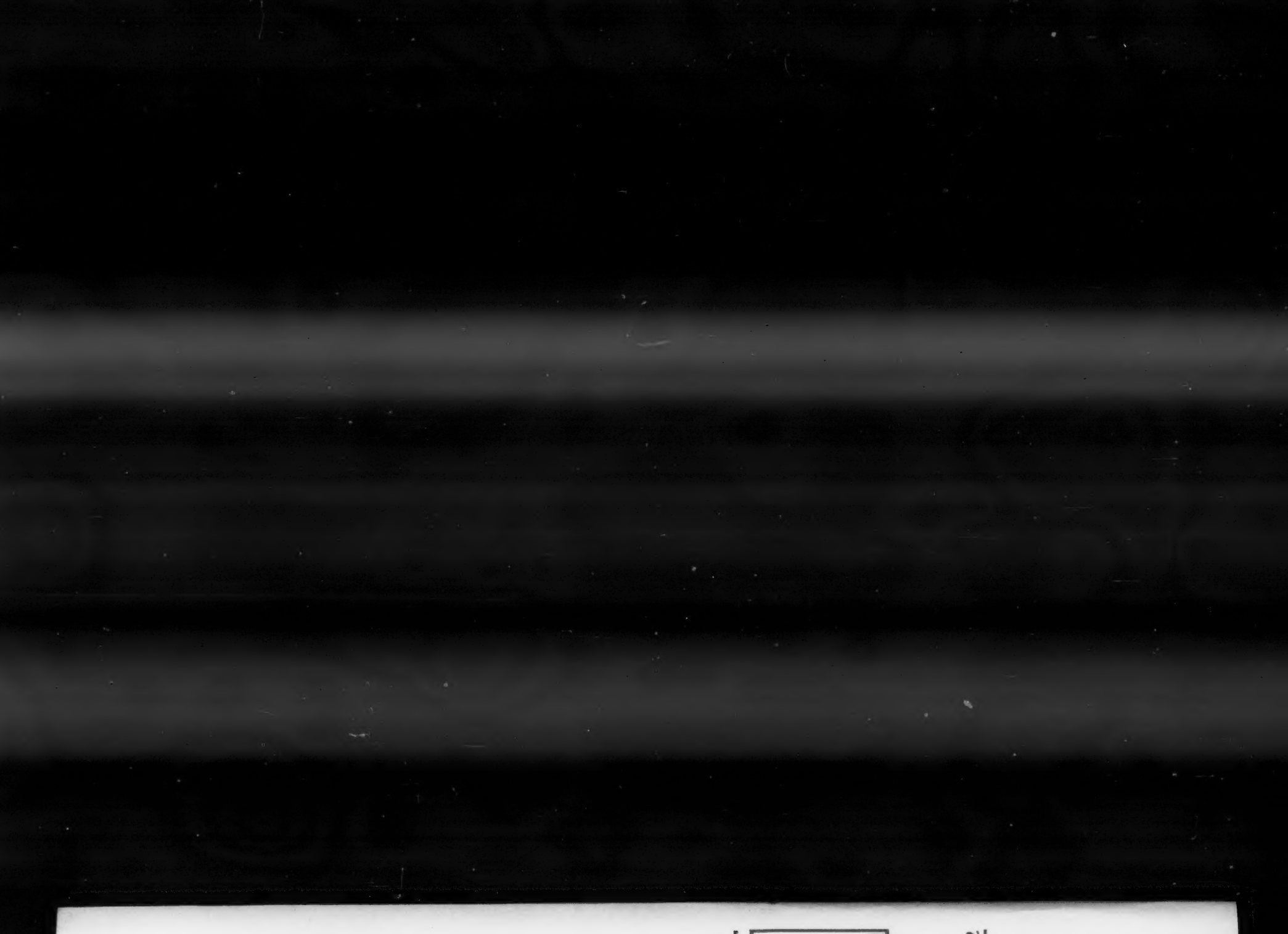
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